FLOOD PLAIN MANAGEMENT STUDY
YELLOW CREEK AND TRIBUTARIES
IN VICINITY OF VERNON
VERNON, ALABAMA

PREPARED BY

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SRVICE
AUBURN, ALABAMA

IN COOPERATION WITH

CITY OF VERNON, ALABAMA
LAMAR COUNTY SOIL AND WATER CONSERVATION DISTRICT
WEST ALABAMA PLANNING AND DEVELOPMENT COUNCIL
STATE OF ALABAMA
OFFICE OF STATE PLANNING AND FEDERAL PROGRAMS

JUNE 1982

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Lamar County Soil and Water Conservation District

City of Vernon

West Alabama Planning and Development Council

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Office of State Planning and Federal Programs

Appreciation is also extended to the many local officials and individuals who contributed information for the study and to landowners who permitted access for engineering surveys and field studies.

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FOREWORD

Pressures created by increased urbanization have intensified the demand for the use of flood plain areas in and adjacent to Vernon, Alabama. Technical information about flood hazards is essential for a local flood plain management program to be effectively planned and implemented.

This report provides flood hazard information for some 14.1 stream miles along Yellow Creek and tributaries. The drainage areas involved range from 66 to 164 square miles within Yellow Creek Watershed, and 71 to 73 square miles in the Hells Creek Watershed, 4.3 to 5.0 square miles in Buck Creek Watershed, and 0.5 to 2.0 square miles for two tributaries. The report includes Flood Hazard Area Photomaps, Flood Profiles, Discharge-Elevation-Frequency Data, and Floodway Data for these streams. Regulatory and corrective measures that would minimize the risk of flooding are also discussed in the report.

Identification of the major flood-prone areas history of flooding and pertinent existing state and local flood-prone area regulations are contained in the report. State and local governmental units will find this information valuable in assessing flood problems and determining actions needed for the judicious use of lands in and adjacent to the flood plain.

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INTRODUCTION

The city of Vernon requested this flood plain management study to identify local flood problems and to encourage only those uses of the flood-prone area commensurate with the flood hazard. This study was carried out in accordance with a plan of study developed in June 1979 by the Soil Conservation Service (SCS) and requesting state and local entities. Flood plain management studies in Alabama are carried out under the revised October 1978 Joint Coordination Agreement between the Soil Conservation Service and the Office of State Planning and Federal Programs (OSPFP). Data in this report are based on investigations and analyses performed by the United States Department of Agriculture, Soil Conservation Service, in cooperation with requesting entities and the Lamar County Soil and Water Conservation District.

The SCS carries out flood plain management studies under the authority of Section 6 of Public Law 83-566, in response to Federal Level Recommendation No. 3 of Water Resources Council revised Unified National Program for Flood Plain Management, September 1979; and in compliance with Executive Order 11988, dated May 24, 1977. Section 11-52-1 through 11-52-84, the Code of Alabama 1975, as amended, provides the zoning authority for municipalities to develop land use controls. Sections 11-19-1 through 11-19-24 of the Code of Alabama 1975, as amended, contains enabling legislation for development of a comprehensive land management and use program in unincorporated flood prone areas of the state. It allows county commissions in Alabama to meet requirements of the National Flood Insurance Act of 1968 (as amended), and authorizes the county commissions to prescribe criteria for land management and use in flood-prone areas.

The objective of this flood plain management study is to furnish needed technical data to local governments so they can prevent potential flood losses that might be caused by unwise development in flood-prone areas.

Information on the possibility of future (24-hour duration) floods of various magnitudes and the extent of flooding which might occur is included for Yellow Creek, Hells Creek, Buck Creek, Tributary 1, and Town Branch and areas within and adjacent to the city of Vernon, Alabama. The extent of potential flooding from the 100-year and 500-year floods is shown on aerial photomaps. Elevations of expected flooding for selected recurrence intervals (10-, 50-, 100-, and 500-year events) are provided on flood profiles for the streams studied. (See "Glossary of Terms" in appendix C for detailed definitions of terms used in the report.)

By using the maps, tables, and profiles presented in this report, the flood elevation at selected locations along the streams may be determined. This information will permit local units of government to implement flood plain management regulations which recognize potential flood hazards.

The maps and profiles are based on conditions that existed at the time field surveys were made in 1980. Such factors as increased urbanization, encroachment on flood-prone areas, relocation or modification of bridges and other stream crossings, and stream channel improvement can have a significant effect on flood stages and areas inundated. Therefore, the results of any flood hazard analyses should be reviewed periodically by appropriate state and local officials and planners to determine if changes in watershed conditions would significantly affect future flood elevations.

The Soil Conservation Service can provide technical assistance through the Lamar County Soil and Water Conservation District to federal, state, and local agencies in the interpretation and use of the information contained herein and will provide additional technical assistance and data needed in local flood plain management programs.

DESCRIPTION OF STUDY AREA

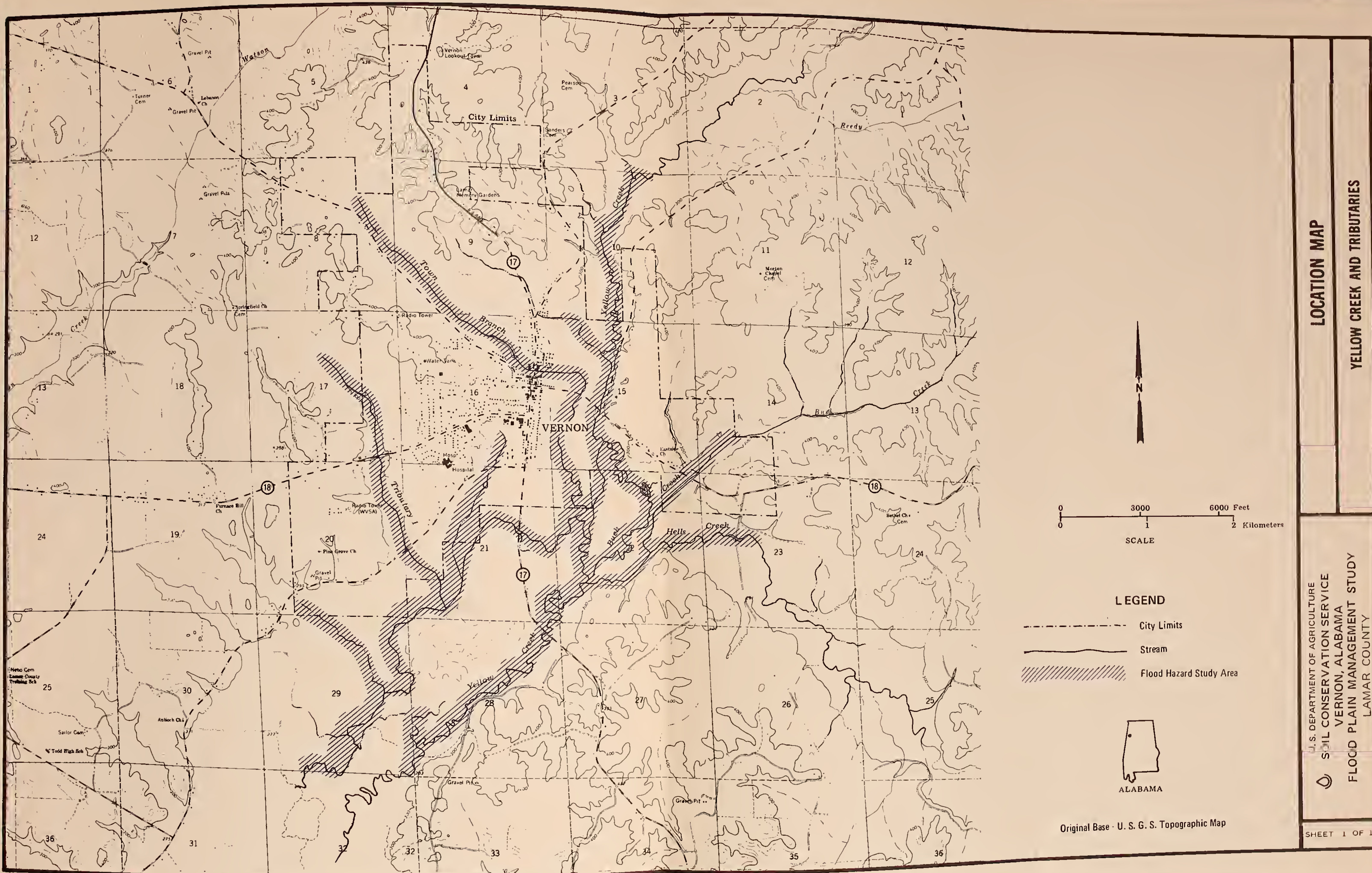
General: The city of Vernon is located in Lamar County, Alabama, within the Tombigbee River Basin (USGS Hydrologic Unit Code Yellow Creek - 03160105.SCS-040-050). The study area includes flood-prone areas of Yellow, Hells, and Buck Creeks, Tributary 1, and Town Branch within and adjacent to the city of Vernon (see location map, page 4). Yellow, Hells, and Buck Creeks are perennial natural streams and flow into Luxapallila Creek from the north east at Stream Mile 15. Drainage areas are approximately as follows: Yellow Creek - 164 square miles, Hells Creek - 73 square miles, Buck Creek - 5.0 square miles, Tributary 1 - 1.7 square miles, and Town Branch - 2.0 square miles at the study limits (see table 1, below). A total of 13.8 stream miles was studied (see table 3, page 10 for each stream length and flood plain acreage).

Lamar County had a population of 16,453 in 1980. Vernon, with a 1980 population of 2,609 experienced a 19.1 percent growth in the 1970-80 decade. The OSPFP has projected the city's population to increase to 3,145 by 1990. The area of incorporation, at present, is approximately 6.0 square miles and the incorporated area subject to flooding by the 100-year frequency storm is 1.4 square mile.

TABLE 1

DRAINAGE AREAS OF STREAMS

Stream or Tributary	Drainage Area Sq. Mi.	Cross Section
Yellow Creek @ Hwy 17	157.0	5
Yellow Creek @ Hwy 18	77.9	8
Yellow Creek @ Old Hwy 18	77.7	11
Tributary 1 @ Co. Rd. 9	1.6	18
Tributary 1 @ Hwy 18	1.3	22
Hells Creek @ Co. Rd.	71.0	29
Buck Creek @ Hwy 18	4.9	33
Town Branch @ Hwy 17	1.9	37
Town Branch @ 1st St. NW	1.8	40



LOCATION MAP
YELLOW CREEK AND TRIBUTARIES
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY
SHEET 1 OF 1
LEGEND
City Limits
Stream
Flood Hazard Study Area
0 3000 6000 Feet
0 1 2 Kilometers
SCALE
N
ALABAMA
Original Base - U. S. G. S. Topographic Map
VERNON
City Limits
Yellow Creek
Town Branch
Tributary
Buck Creek
Hells Creek
Reedy
Watson
Creek
Vernon Lookout Tower
Pearson Cem
Sanders Cem
Lamar Memory Gardens
Morton Chapel Cem
Radio Tower
Water Tank
Hosp
Hospital
Radio Tower (WVSA)
Pine Grove Ch
Gravel Pit
Furnace Hill Ch
Springfield Ch Cem
Lebanon Ch
Turner Cem
Bethel Ch Cem
Antioch Ch
Sailor Cem
Todd High Sch
Gravel Pit
17
18

TABLE 2

AVERAGE TEMPERATURE AND RAINFALL*

Season	Temperature (Degrees Fahrenheit)	Rainfall (Inches)
Winter	45.0	16.20
Spring	62.1	15.42
Summer	78.6	12.77
Fall	62.9	9.73
Yearly Average 1941-70	62.0	54.12

*Climatography - No. 81, Alabama (NOAA, Department of Commerce)

The climate is humid and temperate. Rainfall is generally well distributed throughout the year. The average temperature and rainfall are as shown in table 2 above.

The normal frost-free period is from March 30 to October 30 and averages 220 days.

Topography and Geology: The area lies in the Fall Line Hills district of the East Gulf Coastal Plain Physiographic Section. Elevations range from about 260 feet in the flood plains of Yellow Creek up to about 500 feet on the hills northwest of town. The flood plains are wide and swampy; Yellow Creek flood plain is forested and laced with shallow channels throughout. Uplands are strongly rolling to steep.

The Gordo Formation, a unit of the Tuscaloosa Group of Late Cretaceous Age, underlies the area. The geologic materials of the upland are relatively uncemented clays, sands, and gravel. Formations are undeformed sedimentary deposits dipping gently west-southwest at 20 to 35 feet per mile. Flood plain and terrace materials are sandy silts and clays eroded from the uplands and redeposited along the valleys.

Soils: The soils within the 100-year flood hazard area formed in loamy alluvium on flood plains and low stream terraces. The major soils of the flood

plains are Iuka, Mantachie, Myatt, and Ochlockonnee soils. The major soils of the low stream terraces are Cahaba, Savannah, and Stough soils.

The soils of the flood plains comprise about 80 percent of the study area. They consist of deep, nearly level, friable loamy and sandy soils. Drainage of the flood plain soils range from well drained, as in Ochlockonee soils, to poorly drained, as in Myatt soils.

Soils of the flood plains are subject to frequent flooding, with some of the soils being flooded several times each year. Except for prolonged dry periods, all of these, but Ochlockonee, have a water table that is at, or near, the surface most of the year. Ochlockonee soils are on slightly higher natural levees of the flood plains and are better drained.

The soils on low stream terraces comprise the remaining 20 percent of the study area. They consist of deep, nearly level to gently sloping, friable soils with some containing a fragipan or fragic qualities. Drainage of these soils range from well drained, as in Cahaba soils, to somewhat poorly drained, as in the Stough soils.

Soils of the low stream terraces are not subject to flooding. However, there are some isolated depressional areas that are ponded for brief periods after heavy rains. Some of these soils have a fragipan or fragic qualities in the subsoil that restricts the downward movement of water. During much of the year the water table is perched above this restrictive fragipan. The Cahaba soils do not have a fragipan and, thus, lack this perched water table.

Soils of the flood plains are poorly suited to cultivated crops, have fair suitability for pasture and woodland, and are unsuited for most urban uses because of flooding and wetness. Soils of the low stream terraces are well suited for

cultivated crops, pasture, and woodland. Suitability for urban uses is good for the soils that lack a fragipan and fair for those with a fragipan. The fragipan yields a wetness limitation for most uses.

If detailed soils information is desired for a specific location, the Lamar County Soil and Water Conservation District or personnel in the Soil Conservation Service Field Office in Vernon should be consulted.

A modern soil survey does not exist for Lamar County or the entire area within this flood hazard study.

NATURAL VALUES

Land Use: The present land use in the Yellow Creek Watershed consists of cropland (10 percent), pasture (15 percent), and woodland (73 percent); the remaining land is used for residential, commercial, and industrial areas and roads (less than 2 percent). The present land use in the Buck and Hells Creek Watersheds consists of cropland (1 percent), pasture (3 percent), and woodland (96 percent). The flood plain land use of the study area is as follows: Yellow Creek: urban (11 percent), pasture (6 percent), woodland (56 percent); Hells Creek: pasture (3 percent), woodland (19 percent); Buck Creek: pasture (0.2 percent), woodland (1 percent); Town Branch: urban (0.2 percent), woodland (1.5 percent); and Tributary 1: pasture (1 percent), woodland (1 percent).

Prime Farmlands: Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. Land that may qualify as prime farmland could be cropland, pastureland, rangeland, forest land, or other

land, but not urban built-up land or water. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air.

Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

It is estimated, based on the Soil Map of the Vernon Planning Area (November 1972), that only about 6 percent of this entire study area will qualify as prime farmland. A modern soil survey of this area does not exist, therefore, prime farmland map units have not been delineated. However, soils of this study area that will qualify as prime farmland are map units of the Cahaba and Savannah series.

Wetlands: The area of Yellow, Hells, and Buck Creeks, and Town Branch addressed in this flood plain management study contains both a diversity and abundance of indigenous flora and fauna. The primary plant community is a bottomland hardwood area consisting of Type 1 wetlands. Bottomland hardwood areas, with their attendant wetlands, are generally recognized in Alabama as vital fish and wildlife habitat. Of equal importance, these areas function as pollution filtration systems, as natural flood control mechanisms, and as a major source of ground water recharge. Probably the most obvious economical impact of these vital natural areas is their ability to produce a harvestable surplus of fish and wildlife.

The bottomland hardwood in the study area, and more particularly in the urban portion, has been harvested without regard for a sound timber management plan. Consequently, the choice lumber species have been removed and the less desirable species remain. Most of the woodland area is in the earlier stages of succession.

Representative plant species in the flood plain area include ash, sweetgum, black-gum, oak, willow, sweetbay, yellow poplar, maple, sycamore, ironwood, and elm. The uninhabited portion of the flood plain is fair to good habitat for wildlife species associated with bottomland hardwood communities. The inherent value is, however, reduced somewhat by the area's close proximity to the human population. That is, certain secretive species will not use the area as much as they might if the influence of the human population were not present.

The major species of game fish in the study area include bluegill, green sun-fish, longear sunfish, redear sunfish, warmouth, and largemouth bass. Major species of rough fish include blue catfish, channel catfish, yellow bullhead, bowfin, gar, sucker, buffalo, shiners, and numerous minnows.

The most important game species within the study area are gray squirrel, white-tailed deer, cottontail rabbit, wood duck and bobwhite quail. Important fur-bearers include beaver, bobcat, gray fox, mink, muskrat, raccoon and opossum.

FLOOD PROBLEMS

Historical Floods: Official records on flood elevations are not available in Vernon. The 24-hour rainfall report by the Weather Service shows the storm of April 13, 1979, was about 8 inches rainfall. This is about the 75-year

24-hour flood. During this flood there was $30,000 of damages to the city park and one bridge. Approximately $60,000 of damages were estimated occurred to commercial buildings.

Future Floods: Flood stages presented in this report are based on the assumption that road embankments will not fail before the maximum flood stages are reached. Unusual trash blockages and log jams were not considered in the analysis.

Approximately 2,039 acres in the study area are subject to damage by the 100-year flood. The area of inundation increases approximately 4 percent, to 2,127 acres, for the 500-year flood. The 100-year depths of flooding range from less than 2 feet to over 6 feet on Yellow Creek and less than 1 foot to over 3 feet on tributaries. The velocities vary from less than 1 foot per second to about 5 feet per second. Streams studied are tabulated by reaches with acreages subject to inundation from the 100-year and 500-year floods (see table 3, below).

TABLE 3
STREAM MILEAGE AND FLOOD AREA
100-YEAR AND 500-YEAR FLOODS

STREAM REACH	MILES	CROSS SECTIONS	FLOOD AREA 100-year (Acres)	FLOOD AREA 500-year (Acres)
Yellow Creek	7.2	1 to 15	1,493	1,524
Hells Creek	1.8	27 to 30	433	471
Buck Creek	0.8	31 to 34	25	27
Town Branch	2.0	35 to 48	42	53
Triburary 1	2.0	16 to 26	46	52
TOTAL	13.8		2,039	2,127

The projected urban growth (1980-1990) may cause a significant change in flood levels along the small tributary streams. Continued development of steep

terrain west of the urban area will increase flood peaks. However, increased stages will be less than one-half foot if adequate road, culvert, and storm sewer designs are used.

The flood profile sheets (Appendix B) include expected water surface elevations for the 10-, 50-, 100-, and 500-year frequency floods, and present pertinent bridge and roadway data and elevations of the existing channel bottom. Flood elevations can be estimated at any location from the profiles on Sheets 01P through 07P for Yellow Creek and Sheets 08P and 14P for tributaries.

For information about the estimated floodwater elevation at a specific location, refer to the Flood Hazard Area Photomaps to determine where this location is relative to the nearest upstream and downstream cross sections. To determine a floodwater elevation for a given frequency flood at a specific location, estimate or scale the valley distance between the location in question and the nearest cross section shown on the photomaps. Next, find the location of that cross section on the water surface profile, move the distance from the cross section to the point in question on the profile. Read the flood elevation directly from the profile by going up the elevation scale at the selected station to the plotted elevation line for the frequency flood and then read horizontally to obtain the elevation. The water surface elevation of each flood at selected cross sections are shown in table 5 of appendix C. Typical valley cross sections showing the elevation of the 10-year and 100-year flood are in appendix B.

EXISTING FLOOD PLAIN MANAGEMENT*

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 encourage strict management of flood-prone areas through local regulation. The State of Alabama, responding to the National Flood Insurance Program, authorized and granted powers, by Section 11 of the Code of Alabama 1975, to each county or local government in Alabama to prescribe criteria for land management, including control measures in flood-prone areas. The Office of State Planning and Federal Programs and the Regional Planning Commissions assist county and local governments in carrying out this authority by developing comprehensive land management programs in flood-prone areas. The city of Vernon has participated in the FEMA Flood Insurance Program since July 25, 1974 (Emergency Program). Entrance into this program authorized the sale of flood insurance at subsidized rates for both residential and non-residential structures and mobile homes and their contents throughout the areas subject to flooding in the city. The National Flood Insurance Act of 1968 requires local units of government to develop restrictive measures for flood-prone areas based on competent evaluation of flood hazards and applicable state standards. The city agreed to adopt the codes and ordinances necessary to protect the community from flood hazards. Currently, the city is awaiting a detailed FEMS Flood Insurance Study, and FEMA Flood Insurance Rate Maps, after which the city may be certified as eligible for the Regular Flood Insurance Program of the FEMA.

ALTERNATIVES FOR FLOOD PLAIN MANAGEMENT*

The current level of flood damages is sufficiently low to permit local officials to strengthen their flood plain management program primarily by restricting

* This section of the report was prepared by the West Alabama Planning and Development Council in cooperation with the city of Vernon.

development in the flood plain and regulating upland land use changes to avoid increasing future runoff rates from contributing watershed areas. Technical flood hazard information is a valuable tool which the city of Vernon can use to regulate development and use of the flood-prone area and thereby minimize future losses from flooding. This section is intended to outline a program by which the city can protect itself from the destruction and loss of property associated with a flood, while at the same time achieving wise use of the flood-prone areas. The Flood Hazard Area Photomaps prepared for this study should be adopted as part of Vernon's flood plain management program until a Federal Emergency Management Agency's (FEMA) Flood Insurance Study is completed. When flood zone maps are developed and published as part of the flood insurance study, these maps could be officially incorporated into the city's flood plain management ordinance. Additional controls will need to be imposed when more detailed information is available. It is recommended that the city develop a program to publicize the availability of flood insurance and encourage community residents to participate in the program, especially those located in or near flood-prone areas. Residents in flood-prone areas should be made aware of the impacts of non-participation in the Flood Insurance Program.

In conformance with the requirements of FEMA's Emergency National Flood Insurance Program (NFIP), the city is already enforcing certain regulations in currently identified flood-prone areas. These include the basic subdivision and zoning ordinances and construction codes. A local regulatory program should be implemented through the use of codes and ordinances and proper administrative procedures. Revision of existing codes and adoption of effective policies and procedures can result not only in protection of existing structures but also in the wise management of flood-prone areas in future years. The land use control

measures in flood-prone areas are an important aspect of a flood plain management program. These controls include zoning, subdivision regulation, and construction standards. Additional regulations developed for the flood-prone areas should be integrated with the city's existing land use control policies. The ordinances that are amended and the additional controls that are adopted should be mutually supporting and should be compatible with the city's overall development policies. Assistance will be provided by the West Alabama Planning and Development Council in developing the regulatory measures needed if requested. The following alternatives may also be viable as a part of the city's overall plan to minimize future flood damages:

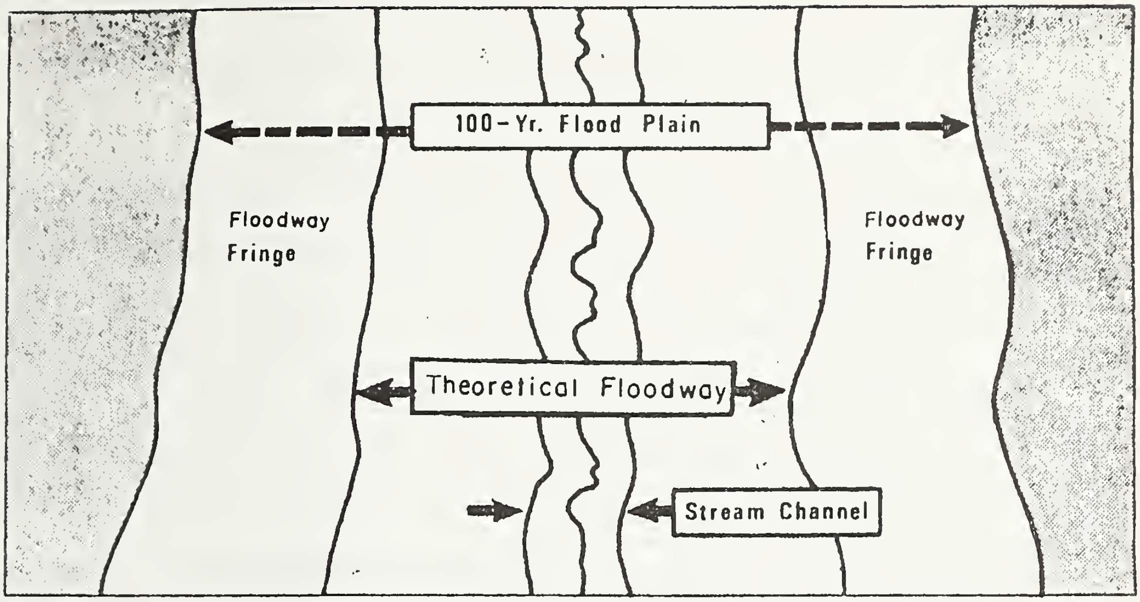
Floodways - Vernon has not yet adopted a floodway restriction. Additional planning and detailed technical data will be necessary to identify and establish floodway limits. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard.

The area of the 100-year flood could be divided into proposed "floodway" and a "floodway fringe". The "floodway" would include the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment to permit the 100-year flood be carried without substantial increase in flood elevations. The area between the floodway and the boundary of the 100-year flood could be termed the "floodway fringe". The floodway fringe would encompass the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than a foot at any point.

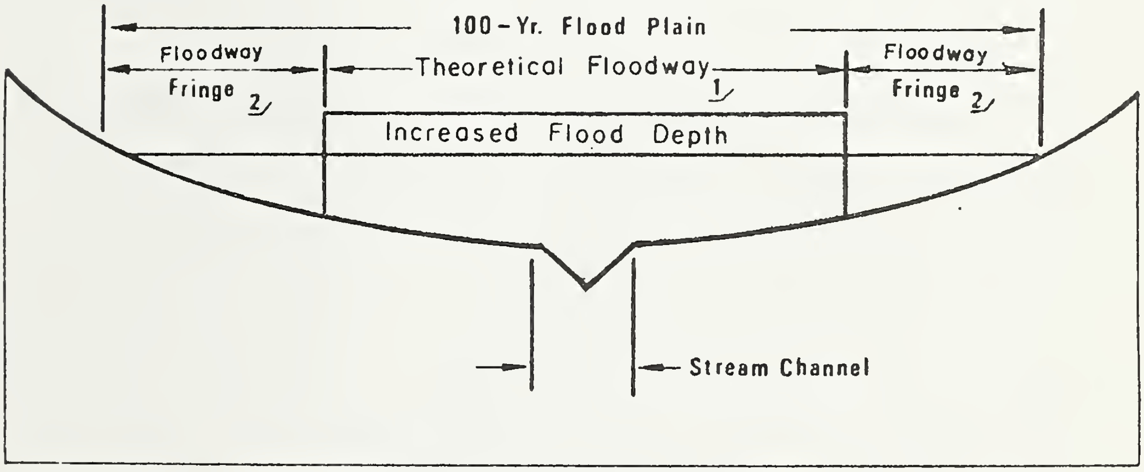
The filling of flood-prone areas and subsequent development would reduce the width of the original floodway. A reduction in floodway width would cause

Figure 2

FLOOD HAZARD AREAS



PLAN VIEW



CROSS SECTION

1/ THEORETICAL FLOODWAY is the adjusted portions of the 100-year flood plain allowing for an acceptable increase in the 100-year flood depth, no building or fill permitted.

2/ FLOODWAY FRINGE --- Urban use permitted if protected by fill, floodproofed, or otherwise protected.

an increase in flood stage for the same discharge. Figure 2 illustrates the possible effect of reducing the floodway width by theoretical encroachment (see figure 2, page 15, and table 6, appendix C).

Construction Standards: The city is currently enforcing the Standard Building Codes published by the Southern Building Code Congress and the National Electrical Code published by the National Fire Protection Association. To comply with the National Flood Insurance Program standards, Vernon will need to adopt more specific flood proofing standards for construction in floodway fringe areas. In addition, standards should be adopted for filling operations in areas subject to flooding, and guidelines be established for storage of materials in floodway fringe areas. These standards may be incorporated into a single flood-prone area ordinance that will supplement the existing construction codes.

Flood Warning and Forecasting - The National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) office in Birmingham, Alabama, issues flood warnings. Severe weather and flood warnings, along with general weather forecasts, are distributed by the National Oceanic and Atmospheric Administration (NOAA) Weather Wire Service. This service links, by teletype, the National Weather Service offices with outlets to news media (newspapers, radio, television) and any other private or government agency in the area where a primary wire service has been established, if they arrange to secure a drop on this circuit. Other local radio stations may obtain the information relayed through news wire services. Rainfall accumulations and predictions of the National Weather Service are furnished to local and county Civil Defense Units when flooding is predicted in their areas. The 5-year, 24-hour flood (4 inches of rainfall)

approaches the level at which damages occur in the business district. Once a flash flood watch is issued by the weather service, the Lamar County Civil Defense Office can monitor stream stages and issue statements to local radio stations for broadcast to the public. Evacuation of low-lying areas can be accomplished through the help of the local National Guard Unit and rescue squad.

Public Information - The success of the Flood Plain Management Program will depend greatly upon the efforts made by local government to inform the public of the program. A public information program should be designed specifically to disseminate to all affected parties the essentials of the program, including code requirements, standards, and insurance provisions. Because the program affects not only future construction but also existing development, it is essential that property owners, land developers, real estate interests, construction interests, and lending institutions be acquainted with the flood plain management program and all of its implications. A knowledgeable and well-informed citizenery is the key to a successful flood plain management program.

Other Alternatives - Other alternatives, i.e., flood proofing existing structures, purchasing and relocating existing structures, and structural solutions to significantly reduce flooding were given only minimum consideration during the study. The frequency of flooding and the level of damagable values were not considered to be sufficient to justify these more costly alternatives.

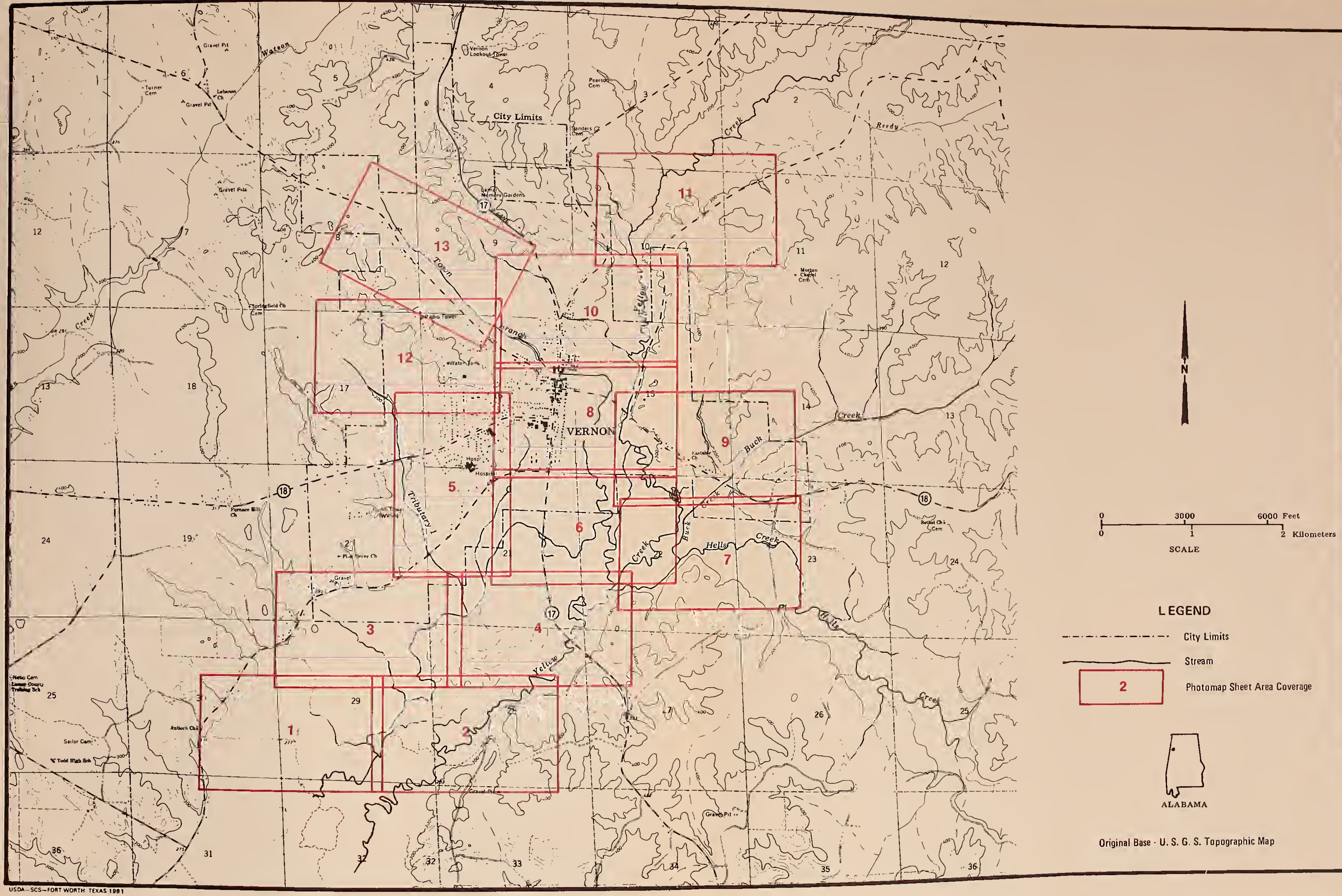
APPENDIX A

PHOTOMAP INDEX

FLOOD HAZARD AREAS - SHEETS 1 THROUGH 22

PHOTOMAP INDEX

YELLOW CREEK AND TRIBUTARIES



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY

SHEET 1 OF 1

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FLOOD HAZARD AREA

YELLOW CREEK AND TRIBUTARIES

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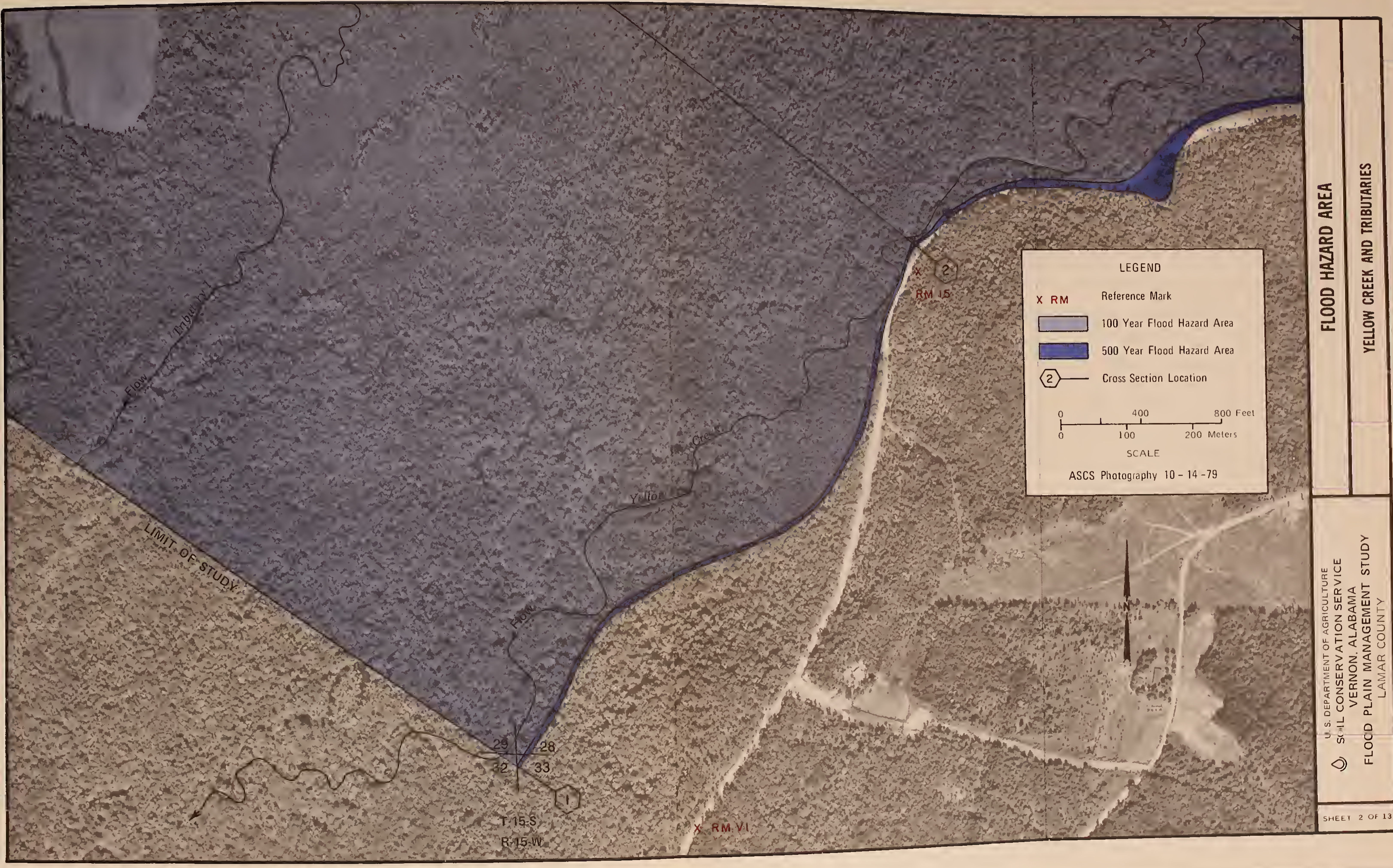
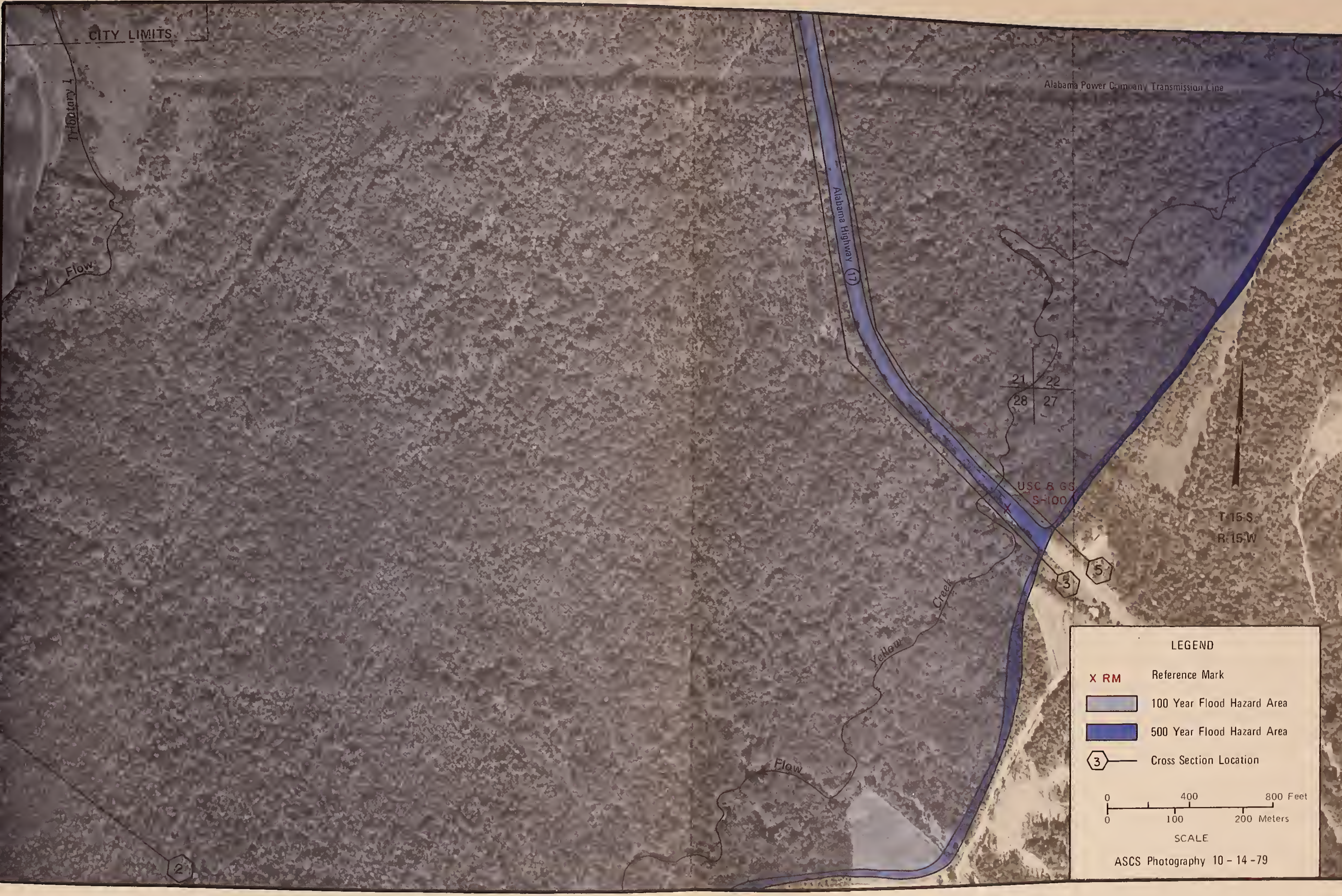
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY

SHEET 1 OF 13



FLOOD HAZARD AREA
YELLOW CREEK AND TRIBUTARIES
LEGEND
X RM Reference Mark
100 Year Flood Hazard Area
500 Year Flood Hazard Area
2 Cross Section Location
0 400 800 Feet
0 100 200 Meters
SCALE
ASCS Photography 10 - 14 -79
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY
SHEET 2 OF 13
LIMIT OF STUDY
Tributary 1
Flow
Yellow Creek
Flow
RM 15
RM VI
29
28
32
33
1
2
T 15 S
R 15 W
N

FLOOD HAZARD AREA
YELLOW CREEK AND TRIBUTARIES
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY
SHEET 3 OF 13
Lama Co. Road 9
LIMIT OF STUDY
CITY LIMITS
X RM 16A
Tributary 1
21
29
T-15-S
R-15-W
N
2
LEGEND
X RM Reference Mark
100 Year Flood Hazard Area
500 Year Flood Hazard Area
2 Cross Section Location
0 400 800 Feet
0 100 200 Meters
SCALE
ASCS Photography 10 - 14 -79



FLOOD HAZARD AREA

YELLOW CREEK AND TRIBUTARIES

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FLOOD HAZARD AREA
YELLOW CREEK AND TRIBUTARIES
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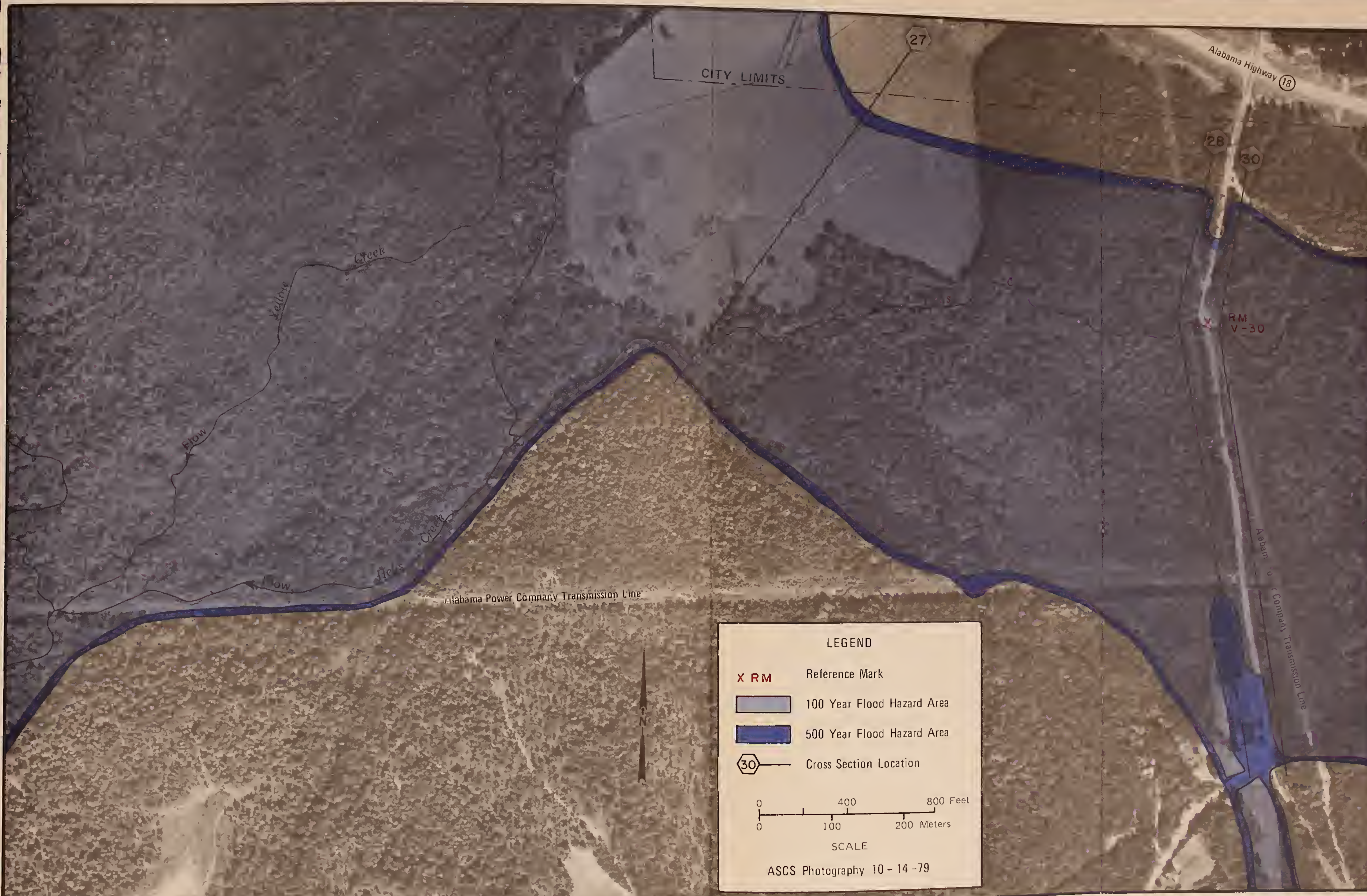
SHEET 5 OF 13
LEGEND
X RM Reference Mark
100 Year Flood Hazard Area
500 Year Flood Hazard Area
19 Cross Section Location
0 400 800 Feet
0 100 200 Meters
SCALE
ASCS Photography 10 - 14 -79
4th St. SW
5th Ave. SW
4th St. SW
Lamar Co. Road
9
5th St. SW
5th St. SW
Alabama Highway
18
6th St. SW
6th Ave. SW
6th St. SW
5th Ave. SW
7th St. SW
4th Ave. SW
7th St. SW
T-15-S
R-15-W
N
16
18
LIMIT
19
20
17
16
20
21
22
23
RM
V23
10th St. SW
3rd St. SW
Tributary 1
LIMITS
24

FLOOD HAZARD AREA

YELLOW CREEK AND TRIBUTARIES

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY

SHEET 6 OF 13

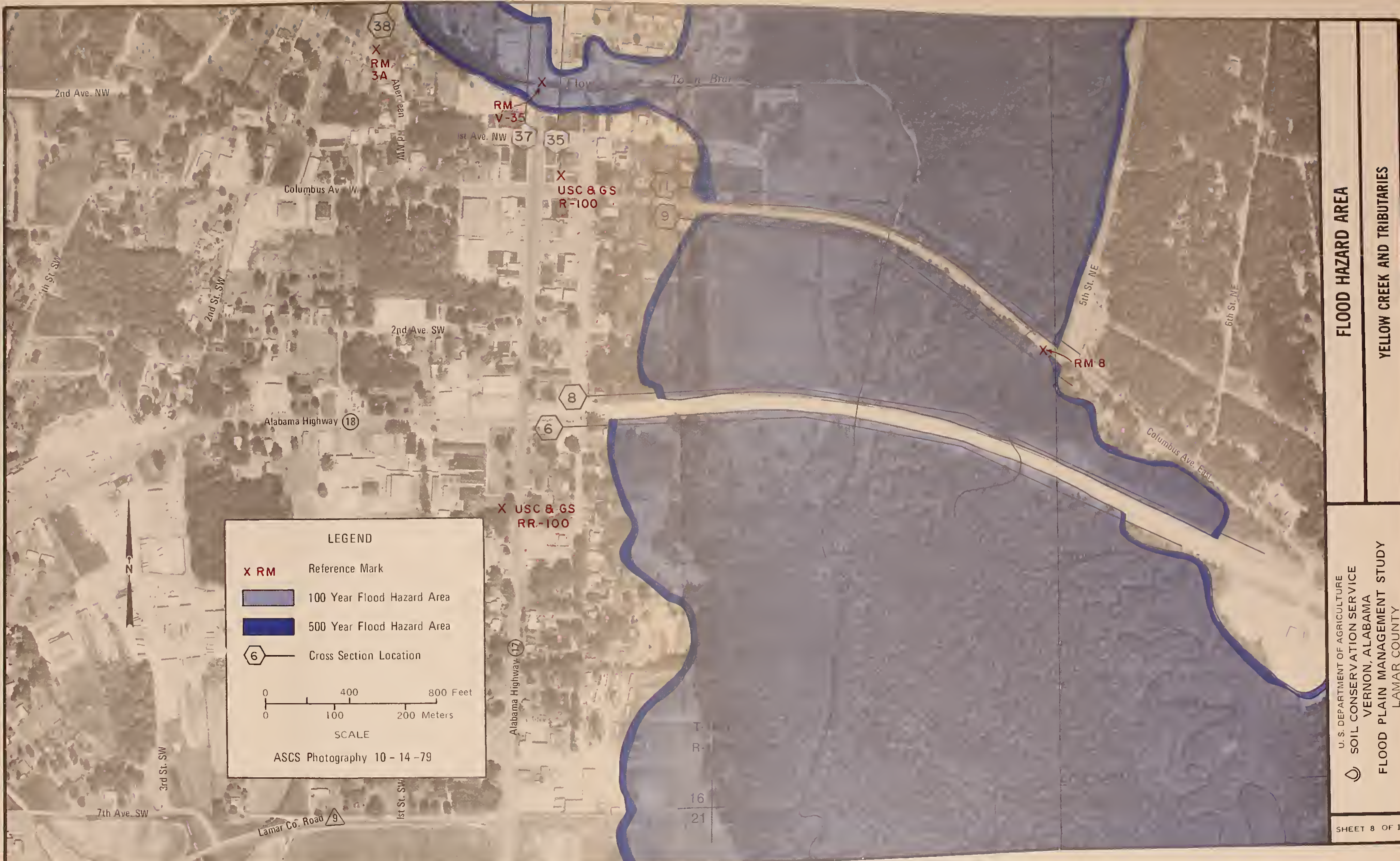


FLOOD HAZARD AREA

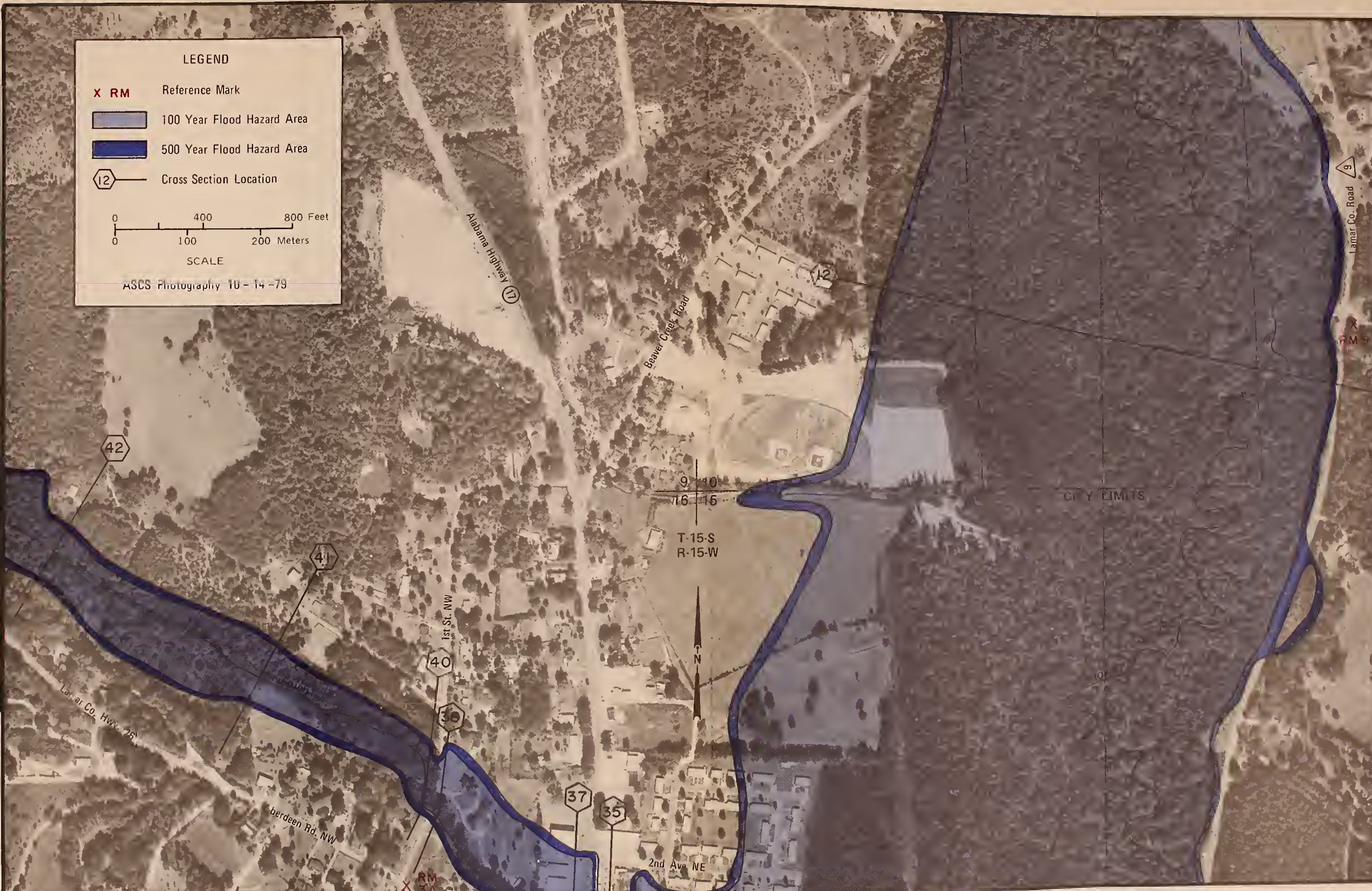
YELLOW CREEK AND TRIBUTARIES

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY

SHEET 7 OF 13


FLOOD HAZARD AREA
YELLOW CREEK AND TRIBUTARIES
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY
SHEET 8 OF 13
LEGEND
X RM Reference Mark
100 Year Flood Hazard Area
500 Year Flood Hazard Area
6 Cross Section Location
0 400 800 Feet
0 100 200 Meters
SCALE
ASCS Photography 10 - 14 -79
N
X RM 3A
RM V-35
X USC & GS R-100
X USC & GS RR-100
X RM 8
38
37
35
9
8
6
2nd Ave. NW
1st Ave. NW
Columbus Av. W.
2nd Ave. SW
2nd St. SW
3rd St. SW
7th Ave. SW
1st St. SW
Aberdeen
Alabama Highway 18
Alabama Highway 17
Lamar Co. Road 9
5th St. NE
6th St. NE
Columbus Ave. East
16
21

LEGEND
X RM Reference Mark
100 Year Flood Hazard Area
500 Year Flood Hazard Area
8 Cross Section Location
0 400 800 Feet
0 100 200 Meters
SCALE
ASCS Photography 10 - 14 -79
CITY LIMITS
LIMIT OF STUDY
RM 8
5th St. NE
6th St. NE
7th St. NE
8th St. NE
9th St. NE
10th St. NE
11th St. NE
1st Ave. NE
Columbus Ave. East
Yellow Creek
Flow
USC & GS
Alabama Highway 18
Old Alabama Highway 18
T-15-S
15-W
FLOOD HAZARD AREA
YELLOW CREEK AND TRIBUTARIES
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY
SHEET 9 OF 13

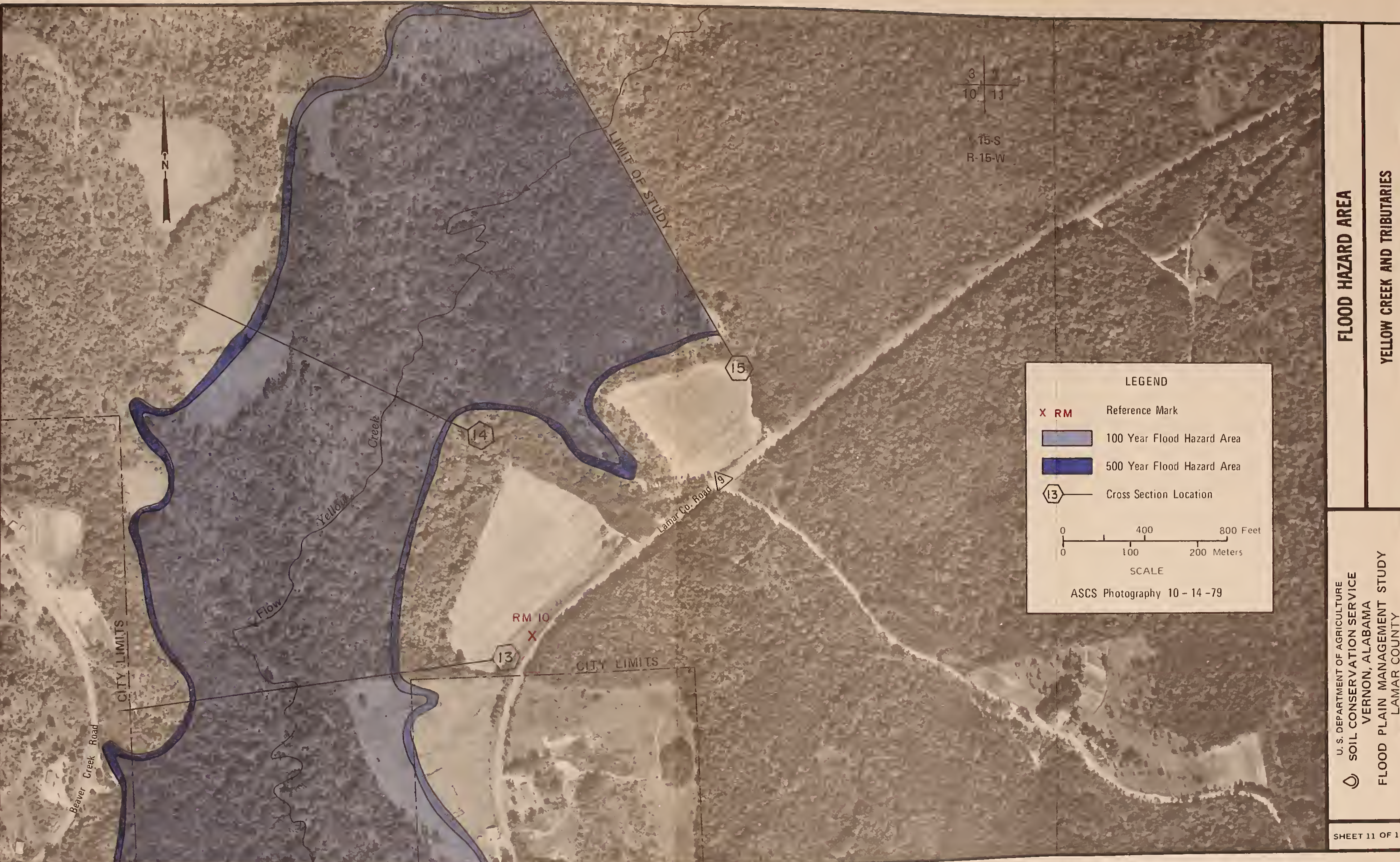


FLOOD HAZARD AREA

YELLOW CREEK AND TRIBUTARIES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY

SHEET 10 OF 13



FLOOD HAZARD AREA
YELLOW CREEK AND TRIBUTARIES
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY
SHEET 11 OF 13
LEGEND
X RM Reference Mark
100 Year Flood Hazard Area
500 Year Flood Hazard Area
13 Cross Section Location
0 400 800 Feet
0 100 200 Meters
SCALE
ASCS Photography 10 - 14 -79
N
3 2
10 11
T-15-S
R-15-W
LIMIT OF STUDY
15
14
13
9
Lamar Co. Road
Yellow Creek
Flow
RM 10
CITY LIMITS
CITY LIMITS
Beaver Creek Road

FLOOD HAZARD AREA

YELLOW CREEK AND TRIBUTARIES

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY

SHEET 12 OF 13

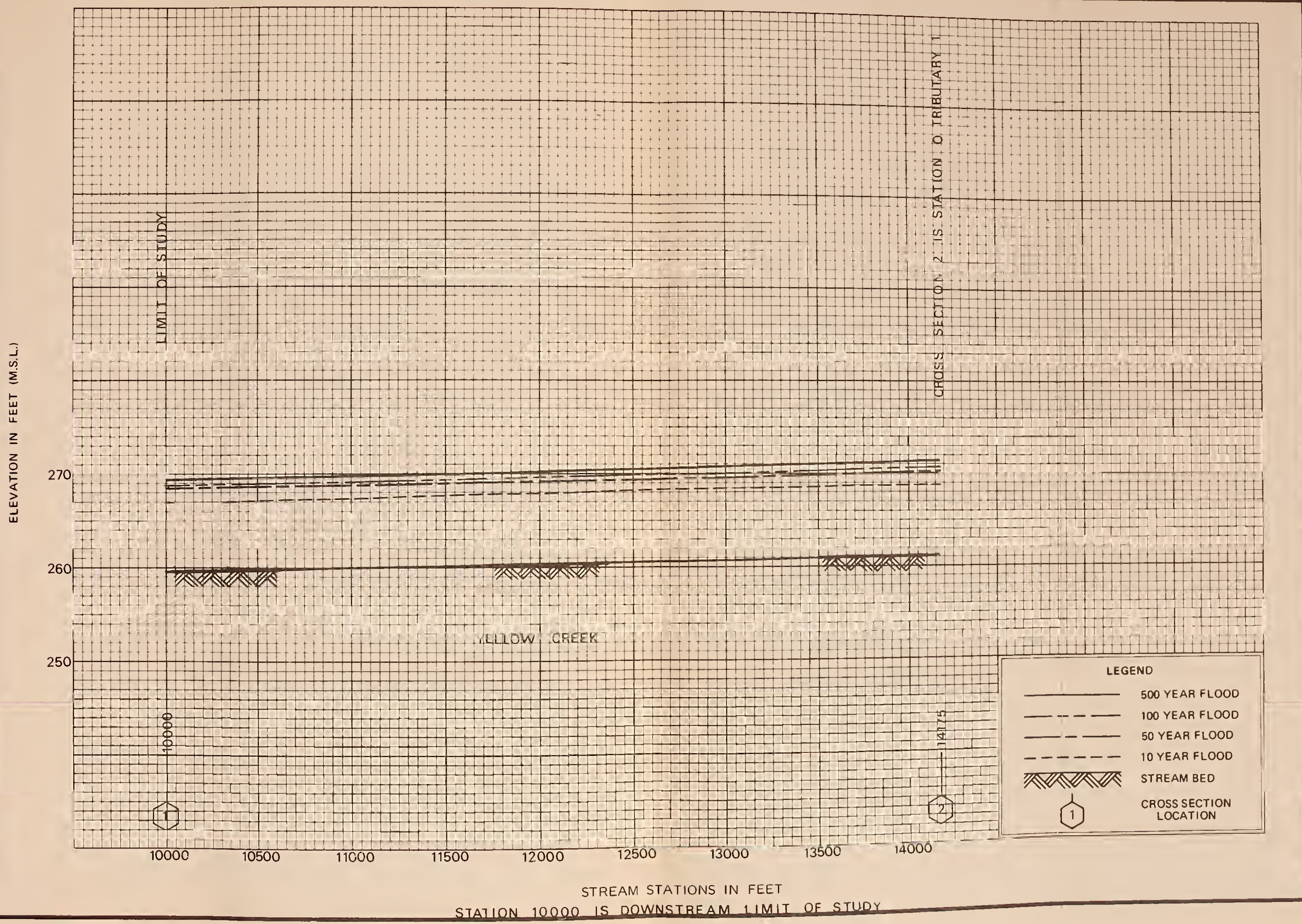
LEGEND
X RM Reference Mark
100 Year Flood Hazard Area
500 Year Flood Hazard Area
44 Cross Section Location
0 400 800 Feet
0 100 200 Meters
SCALE
ASCS Photography 10 - 14 -79
CITY LIMITS
CITY LIMITS
RM 6
RM 5
RM 3
48
46
45
44
42
26
Flow
N
Lamar Co. Hwy.
10th St. NW
11th St. NW
12th St. NW
FLOOD HAZARD AREA
YELLOW CREEK AND TRIBUTARIES
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
LAMAR COUNTY
SHEET 13 OF 13

APPENDIX B

FLOOD PROFILES

AND

TYPICAL VALLEY CROSS SECTIONS



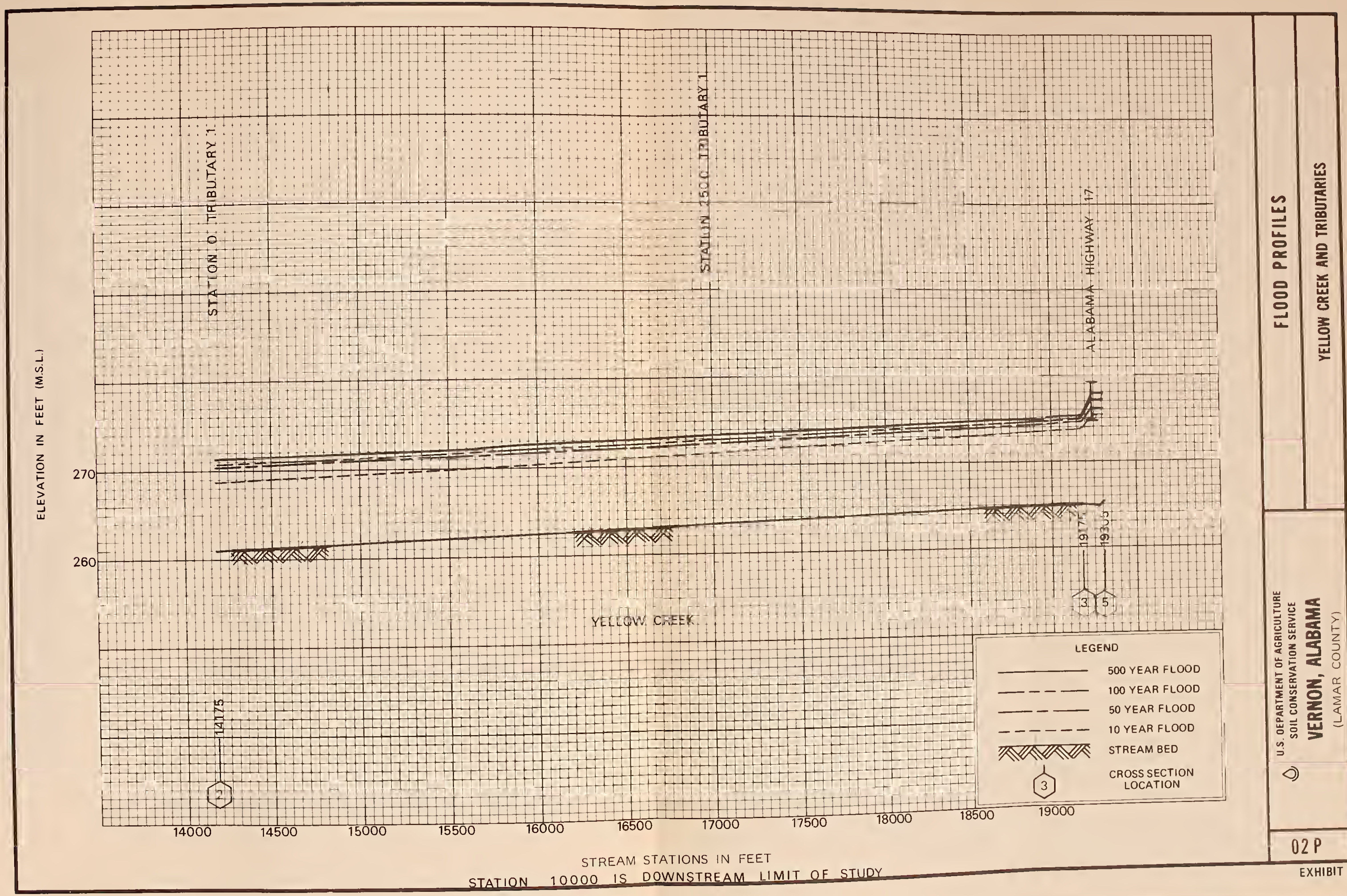
FLOOD PROFILES

YELLOW CREEK AND TRIBUTARIES

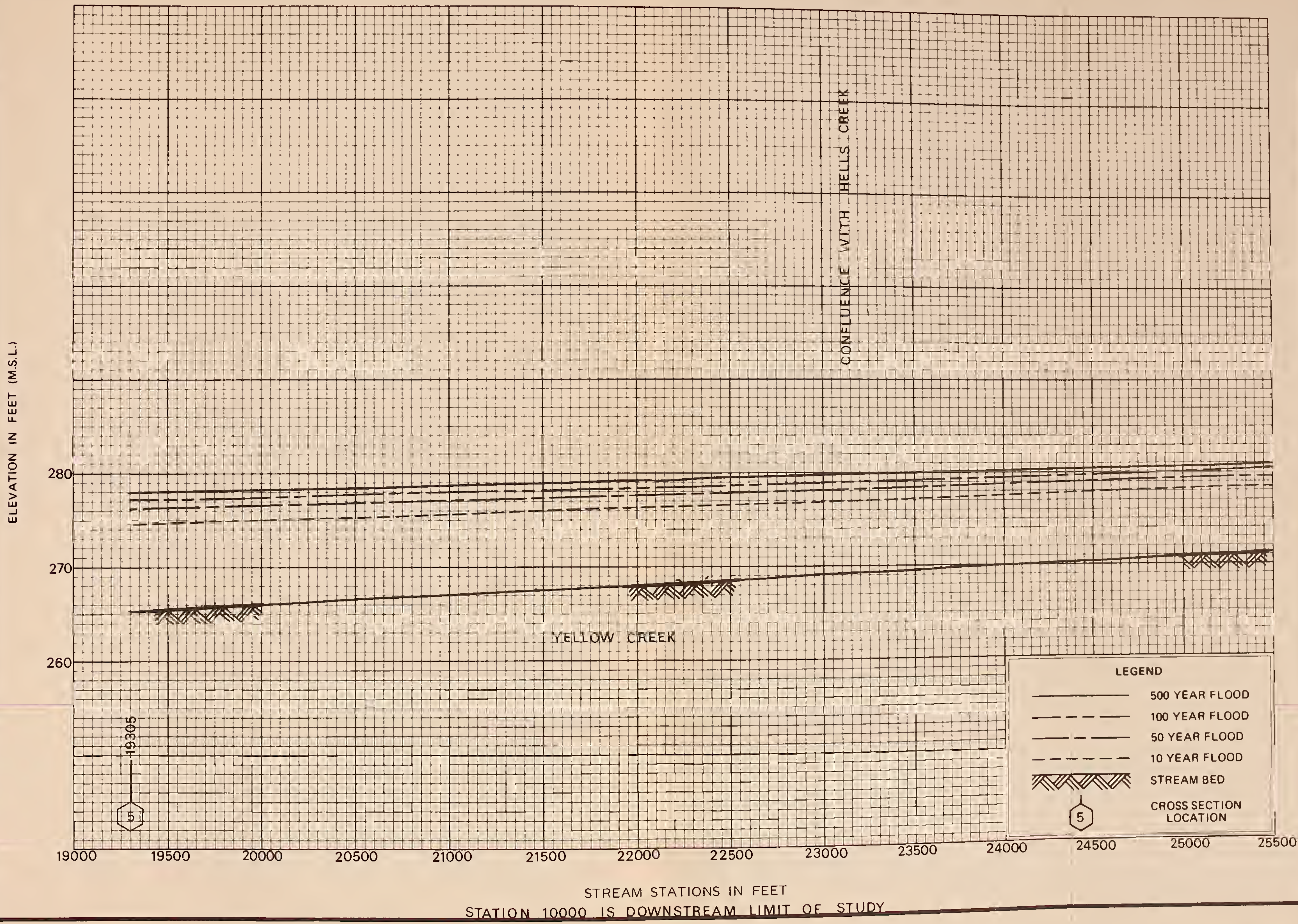
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
(LAMAR COUNTY)

01P

EXHIBIT 1



STATION 0, TRIBUTARY 1
STATION 2500, TRIBUTARY 1
ALABAMA HIGHWAY 17
ELEVATION IN FEET (M.S.L.)
270
260
14175
19175
19305
2
3
5
YELLOW CREEK
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
14000
14500
15000
15500
16000
16500
17000
17500
18000
18500
19000
STREAM STATIONS IN FEET
STATION 10000 IS DOWNSTREAM LIMIT OF STUDY
FLOOD PROFILES
YELLOW CREEK AND TRIBUTARIES
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
(LAMAR COUNTY)
02 P
EXHIBIT 1



FLOOD PROFILES

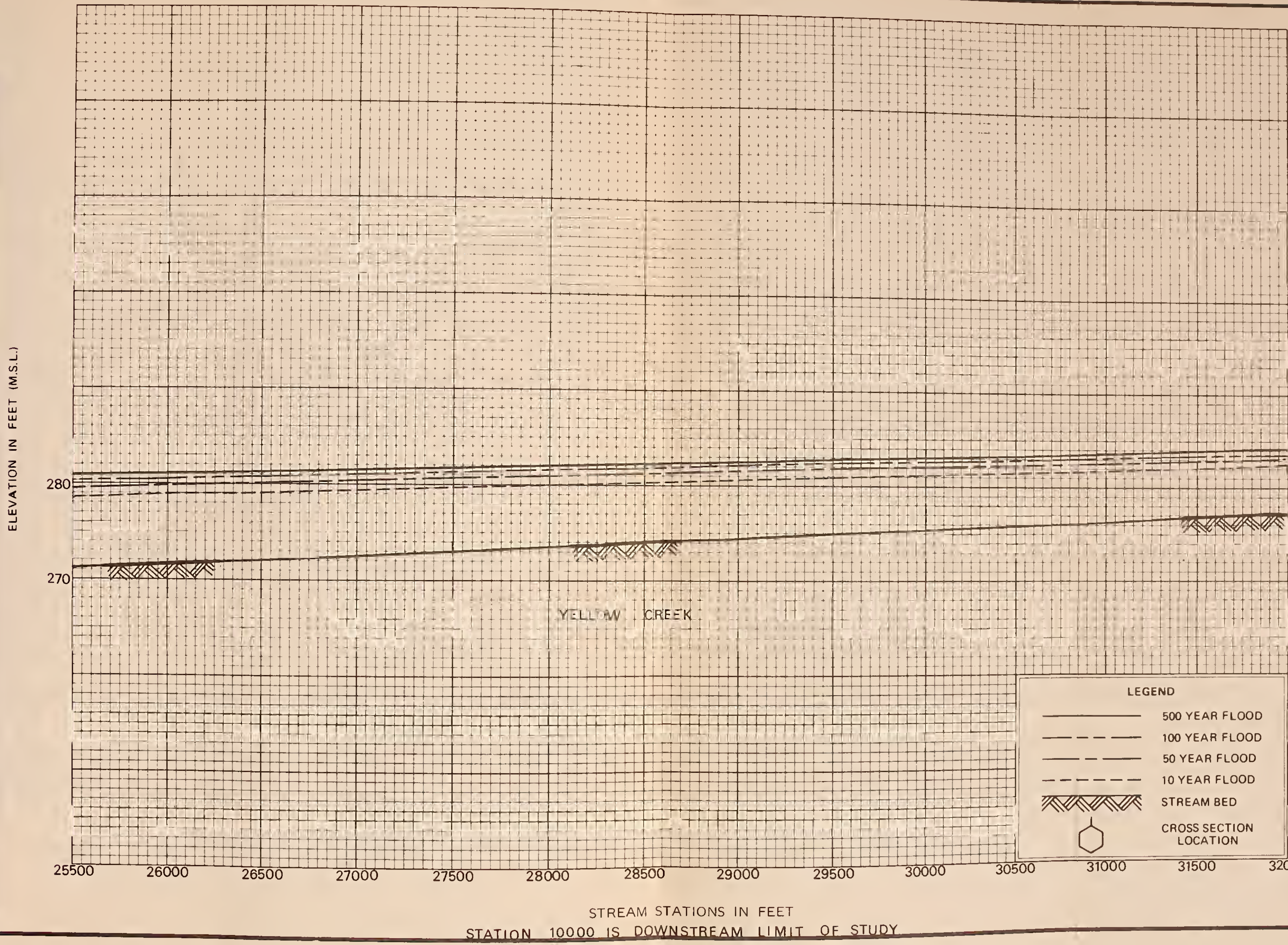
YELLOW CREEK AND TRIBUTARIES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

VERNON, ALABAMA
(LAMAR COUNTY)

03 P

EXHIBIT 1



FLOOD PROFILES

YELLOW CREEK AND TRIBUTARIES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

VERNON, ALABAMA
(LAMAR COUNTY)

04 P

EXHIBIT 1

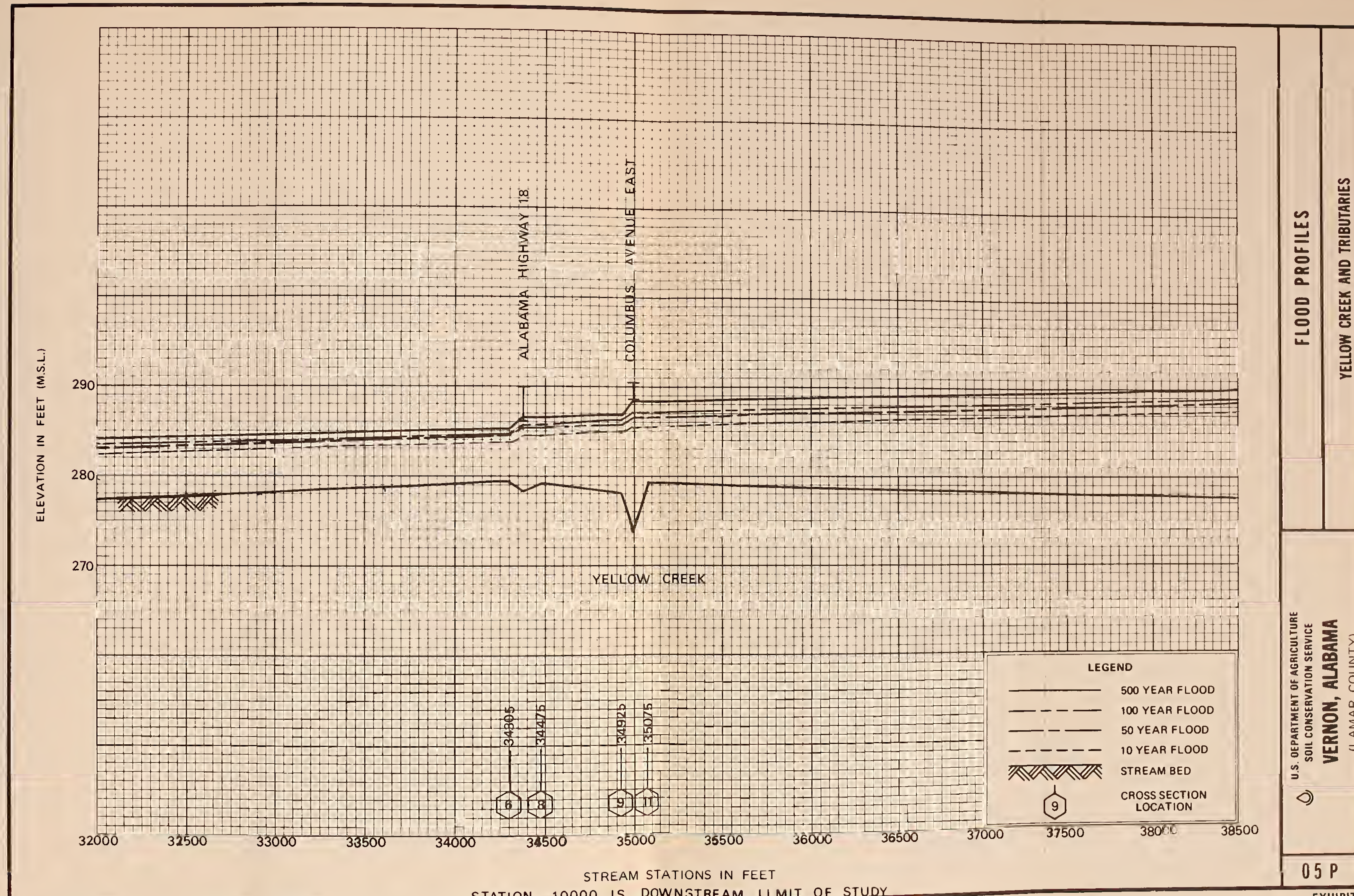
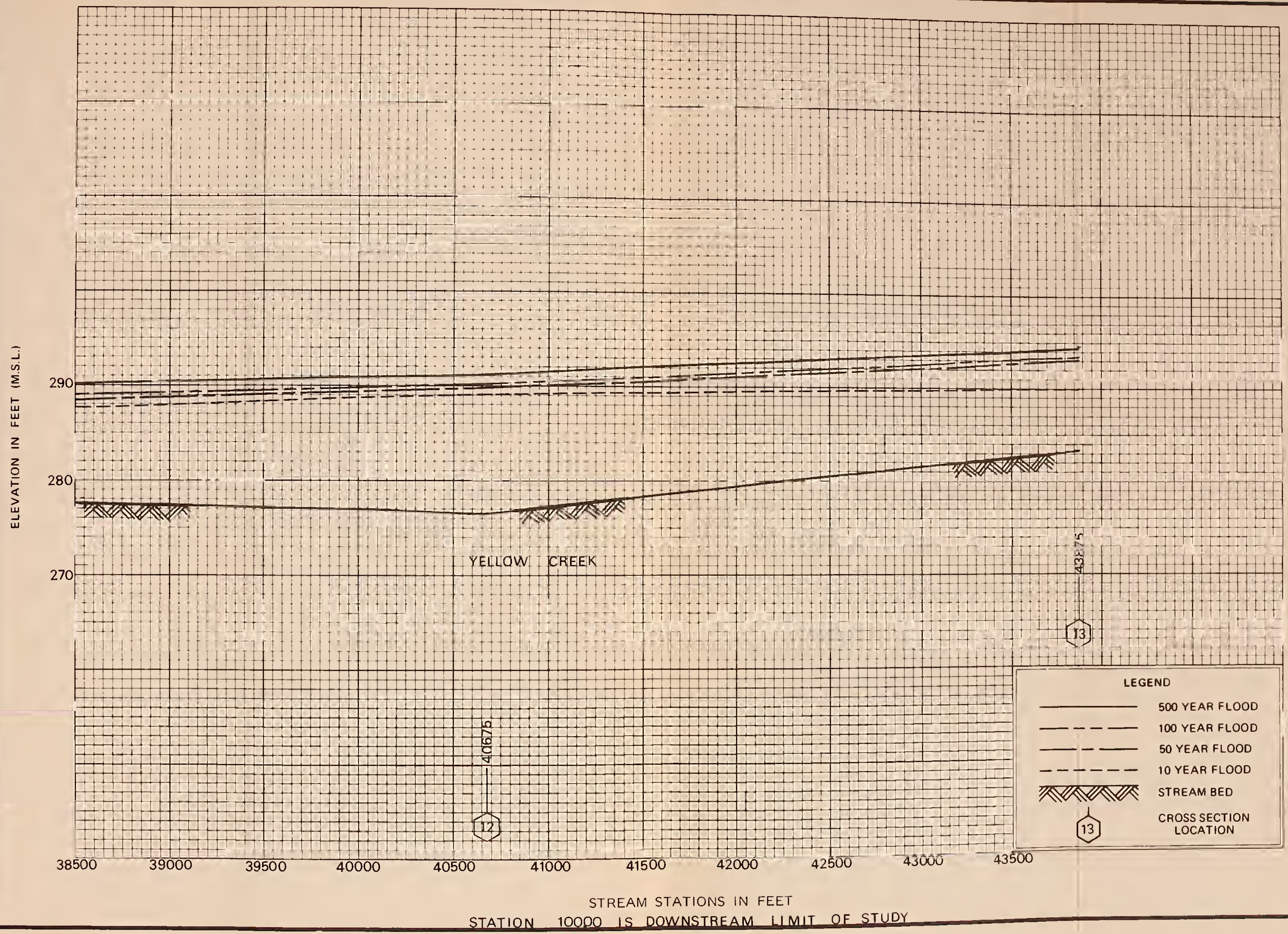

ALABAMA HIGHWAY 18
COLUMBUS AVENUE EAST
ELEVATION IN FEET (M.S.L.)
290
280
270
YELLOW CREEK
34305
34475
34925
35075
6
8
9
11
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
32000
32500
33000
33500
34000
34500
35000
35500
36000
36500
37000
37500
38000
38500
STREAM STATIONS IN FEET
STATION 10000 IS DOWNSTREAM LIMIT OF STUDY
FLOOD PROFILES
YELLOW CREEK AND TRIBUTARIES
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
(LAMAR COUNTY)
05 P

EXHIBIT 1



FLOOD PROFILES

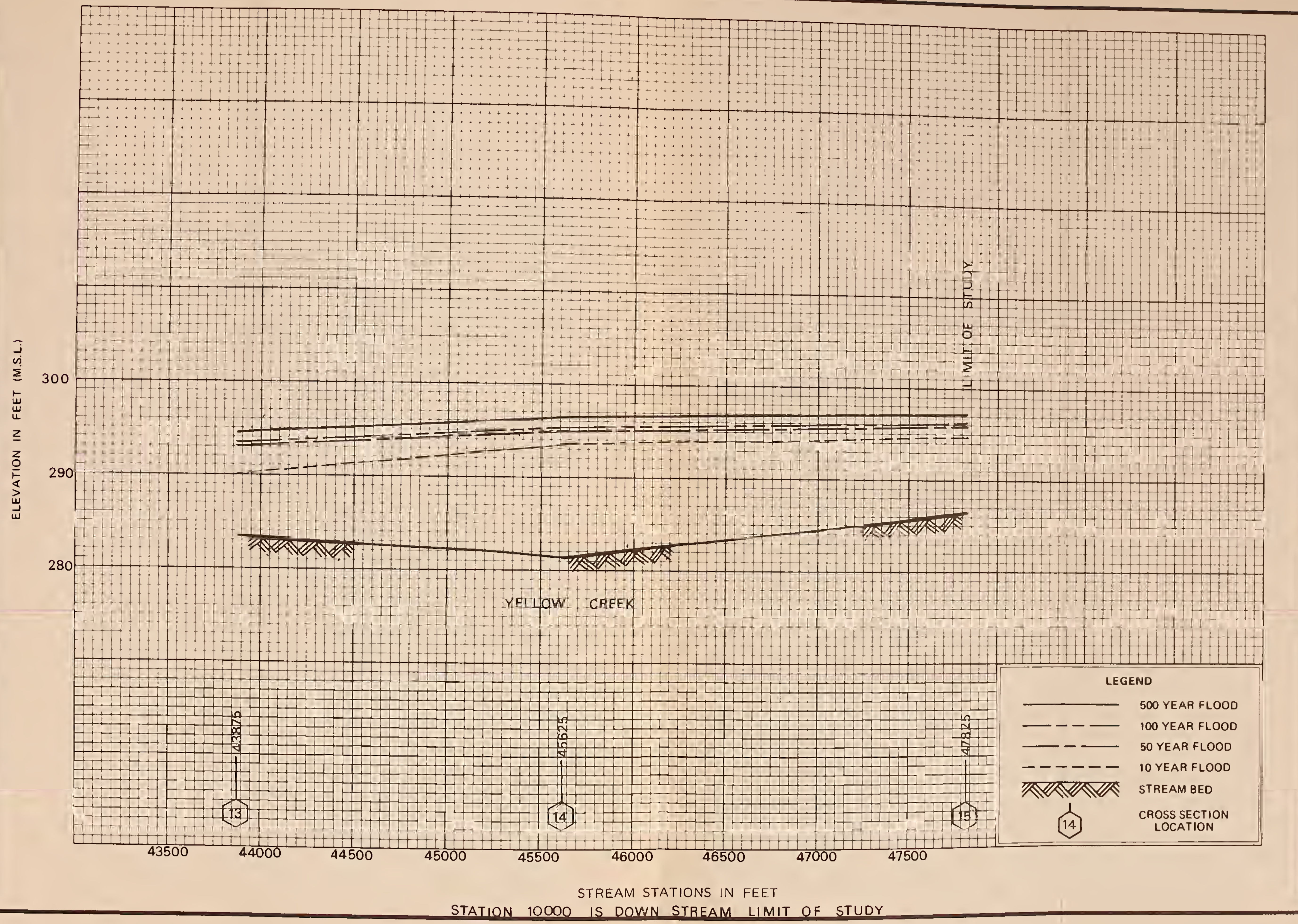
YELLOW CREEK AND TRIBUTARIES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

VERNON, ALABAMA
(LAMAR COUNTY)

06P

EXHIBIT 1



FLOOD PROFILES

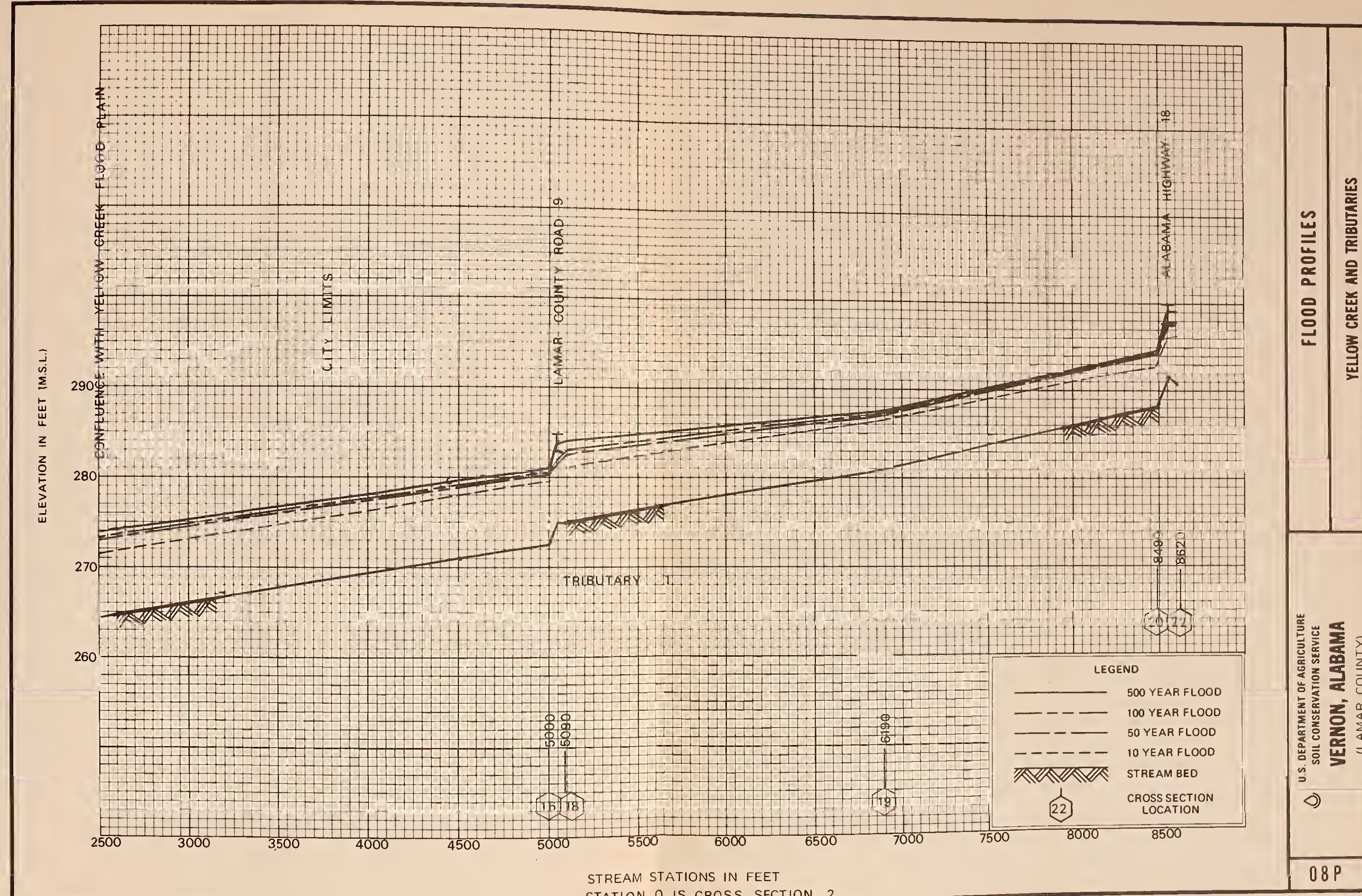
YELLOW CREEK AND TRIBUTARIES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

VERNON, ALABAMA
(LAMAR COUNTY)

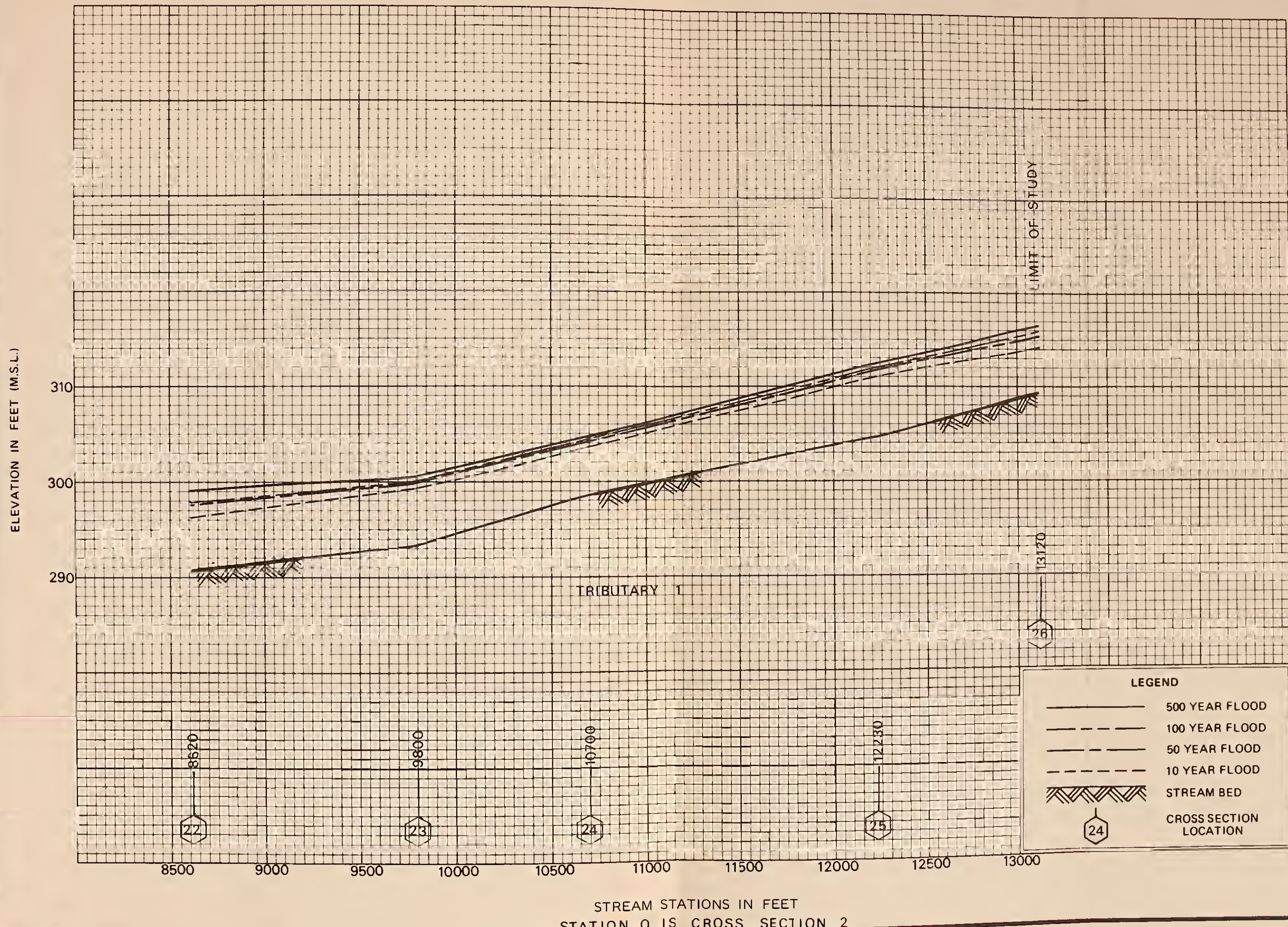
07P

EXHIBIT 1



CONFLUENCE WITH YELLOW CREEK FLOOD PLAIN
CITY LIMITS
LAMAR COUNTY ROAD 9
ALABAMA HIGHWAY 18
TRIBUTARY 1
ELEVATION IN FEET (M.S.L.)
290
280
270
260
5000
5090
6190
8490
8620
16
18
19
20
22
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
8500
STREAM STATIONS IN FEET
STATION 0 IS CROSS SECTION 2
FLOOD PROFILES
YELLOW CREEK AND TRIBUTARIES
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
(LAMAR COUNTY)
08P

EXHIBIT 1



FLOOD PROFILES

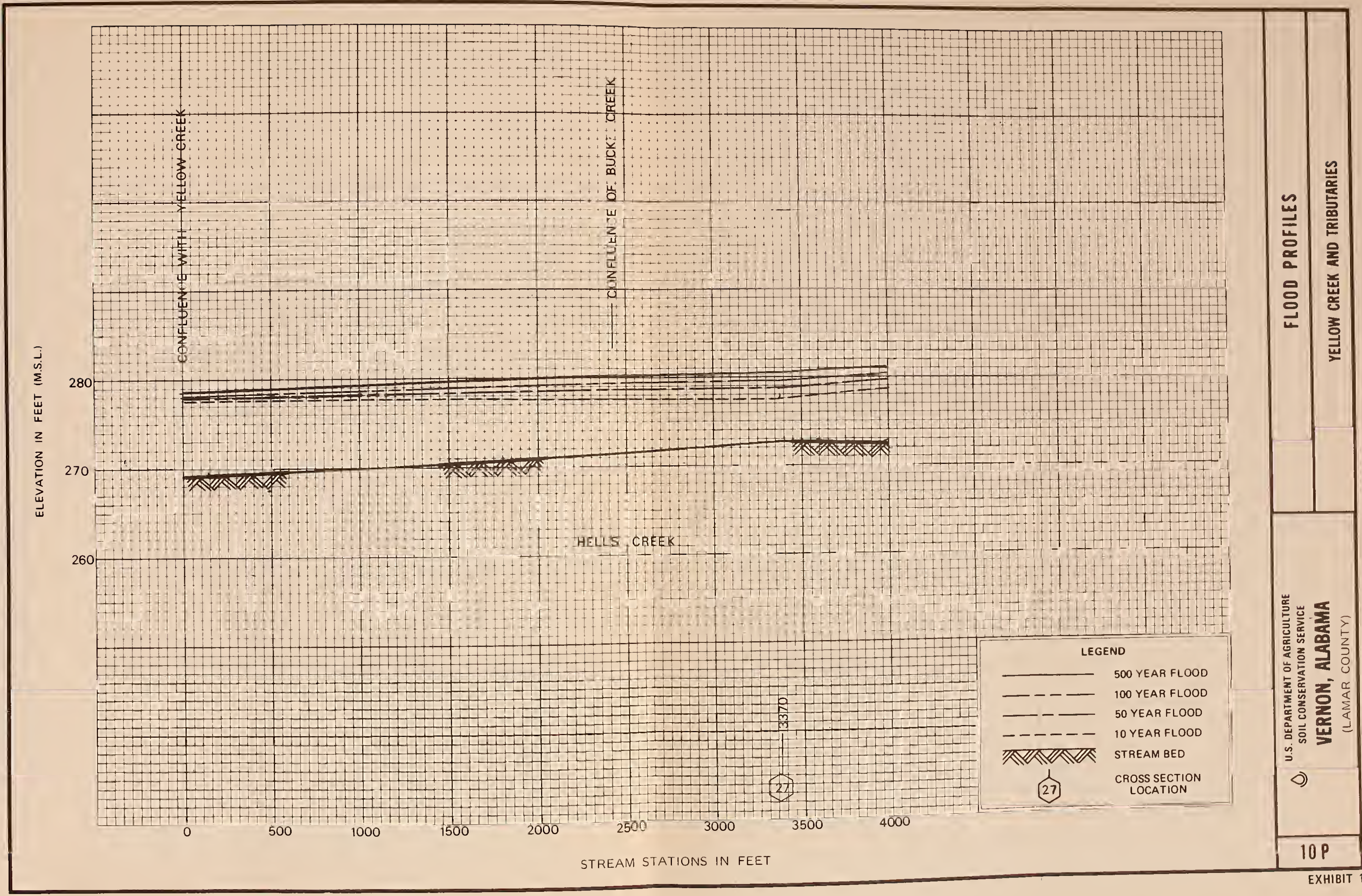
YELLOW CREEK AND TRIBUTARIES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

VERNON, ALABAMA
(LAMAR COUNTY)

09P

EXHIBIT 1



CONFLUENCE WITH YELLOW CREEK
CONFLUENCE OF BUCK CREEK
ELEVATION IN FEET (M.S.L.)
280
270
260
HELLS CREEK
3370
27
0
500
1000
1500
2000
2500
3000
3500
4000
STREAM STATIONS IN FEET
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
YELLOW CREEK AND TRIBUTARIES
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
(LAMAR COUNTY)
10 P
EXHIBIT 1

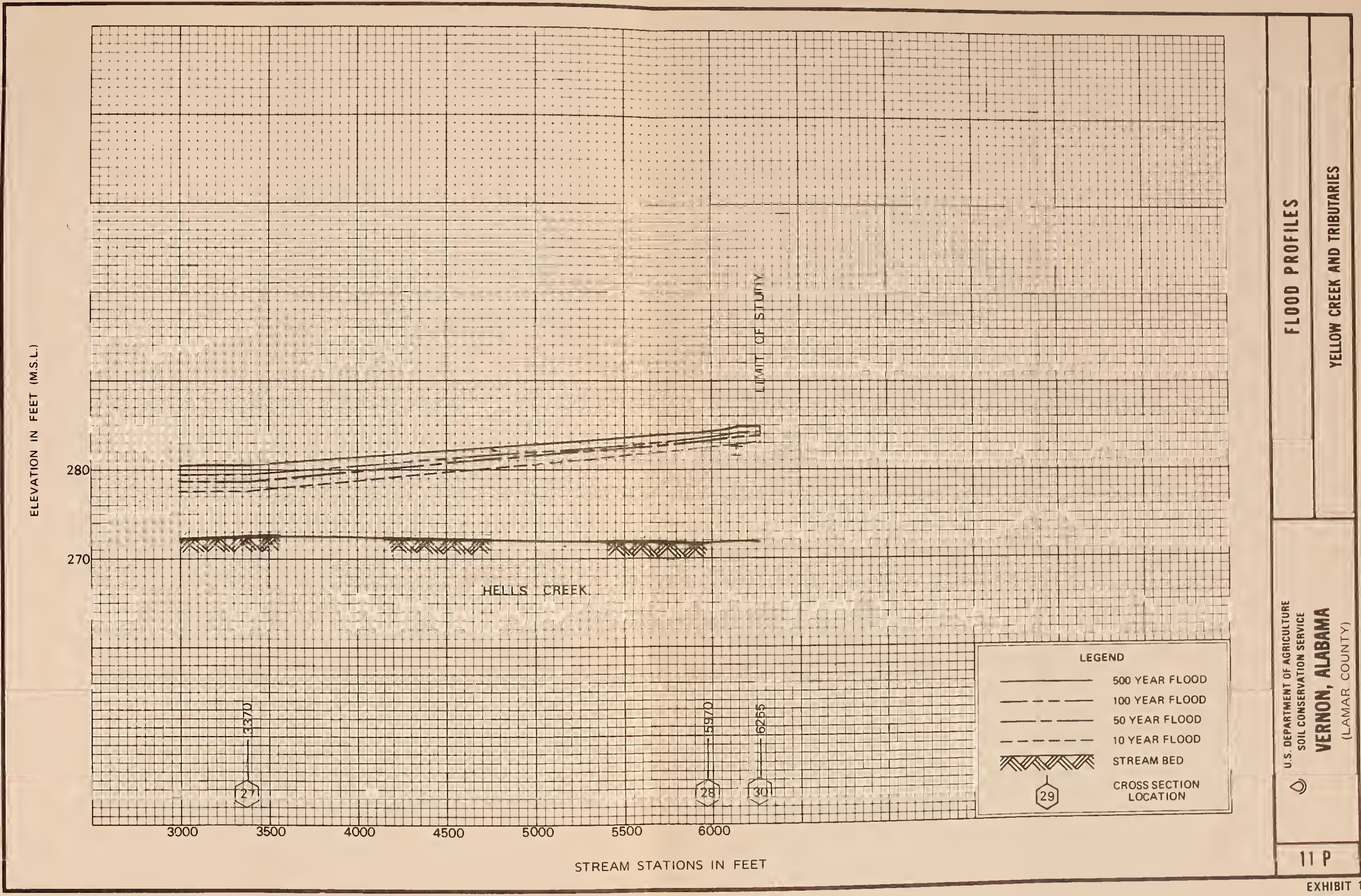
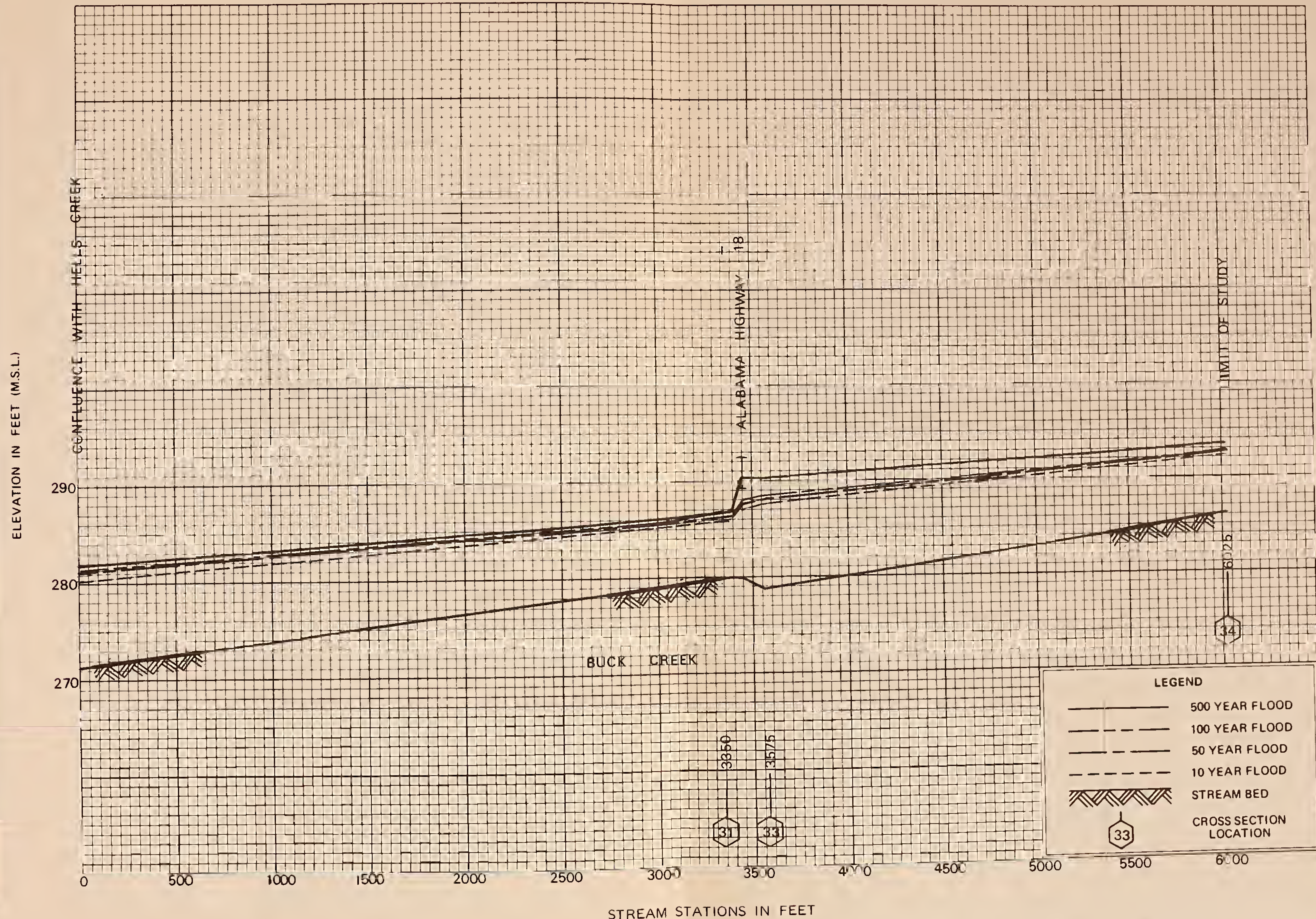

FLOOD PROFILES
YELLOW CREEK AND TRIBUTARIES
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
(LAMAR COUNTY)
11 P
ELEVATION IN FEET (M.S.L.)
280
270
LIMIT OF STUDY
HELLS CREEK
3370
5970
6265
27
28
30
3000
3500
4000
4500
5000
5500
6000
STREAM STATIONS IN FEET
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
29
CROSS SECTION LOCATION

EXHIBIT 1



FLOOD PROFILES

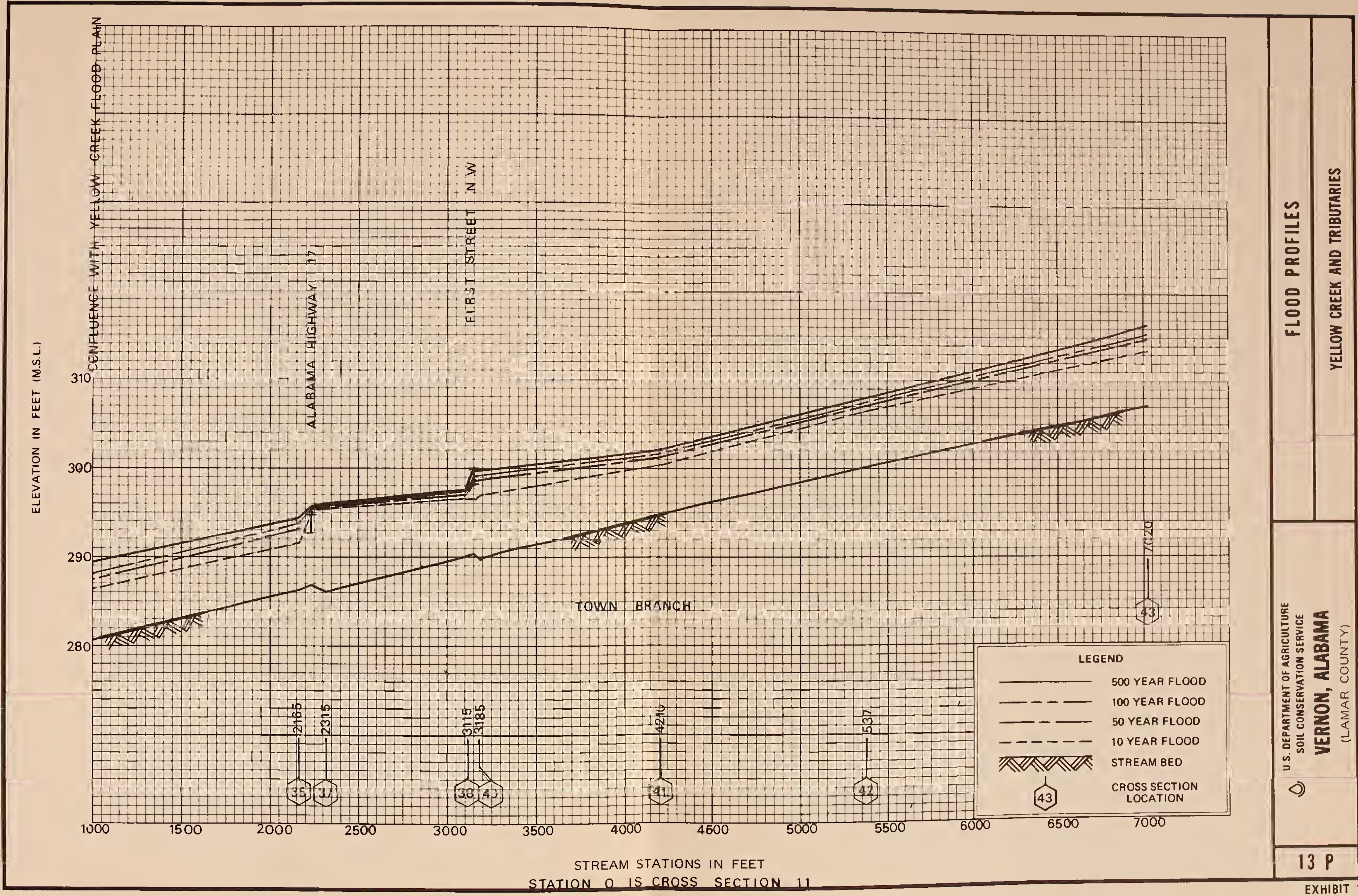
YELLOW CREEK AND TRIBUTARIES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

VERNON, ALABAMA
(LAMAR COUNTY)

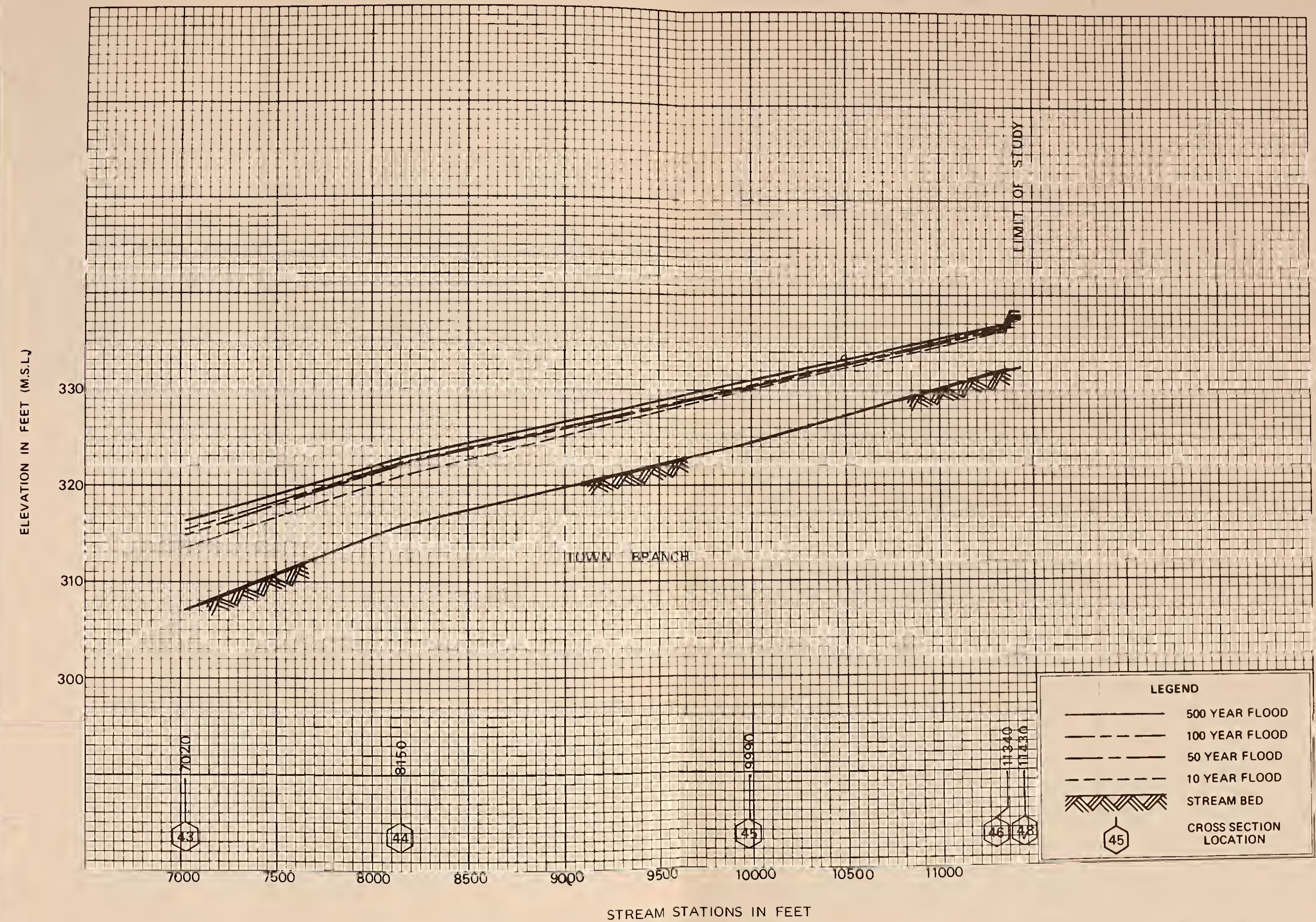
12 P

EXHIBIT 1



13 P

EXHIBIT 1



FLOOD PROFILES

YELLOW CREEK AND TRIBUTARIES

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

VERNON, ALABAMA
(LAMAR COUNTY)

14 P

EXHIBIT 1

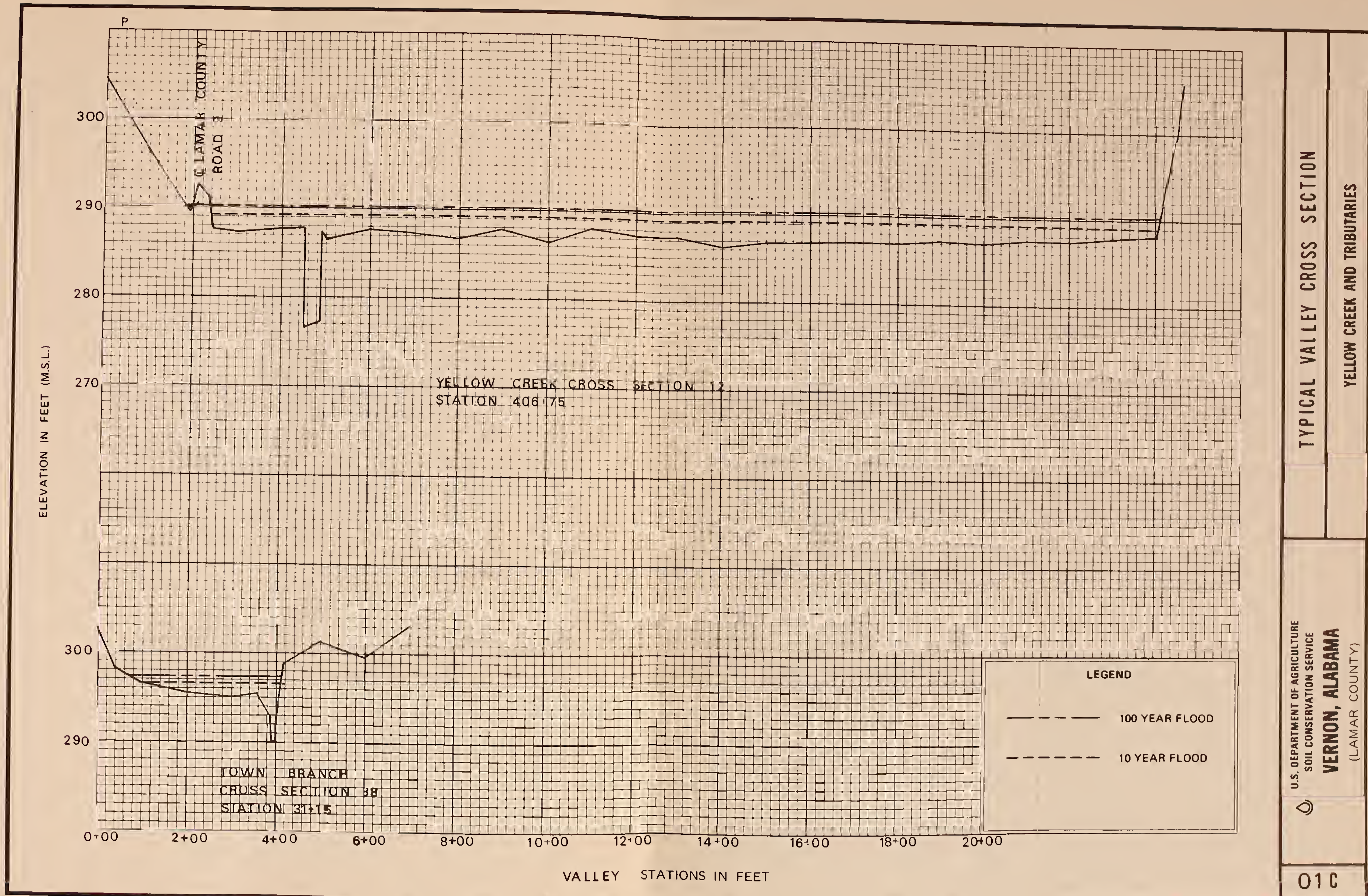

P
℄ LAMAR COUNTY ROAD 9
YELLOW CREEK CROSS SECTION 12
STATION 406+75
TOWN BRANCH
CROSS SECTION 38
STATION 31+15
ELEVATION IN FEET (M.S.L.)
300
290
280
270
300
290
0+00
2+00
4+00
6+00
8+00
10+00
12+00
14+00
16+00
18+00
20+00
VALLEY STATIONS IN FEET
LEGEND
100 YEAR FLOOD
10 YEAR FLOOD
TYPICAL VALLEY CROSS SECTION
YELLOW CREEK AND TRIBUTARIES
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
VERNON, ALABAMA
(LAMAR COUNTY)
01C

EXHIBIT 1

APPENDIX C

TECHNICAL STUDY PROCEDURES

ELEVATION REFERENCE MARKS

DISCHARGE-ELEVATION-FREQUENCY DATA

FLOODWAY WIDTHS AND 100-YEAR

DISCHARGES AND VELOCITIES

GLOSSARY OF TERMS

REFERENCES CITED

TECHNICAL STUDY PROCEDURES

Hydrologic Data: Government agencies and city and county officials were contacted by SCS personnel during various phases of the study. The SCS field office in Vernon furnished land use data and other information used in this study.

The magnitude, in inches of rainfall, of the flood-producing storms used in determining runoff in the study area, are shown below:

Event (Frequency)	Storm Rainfall* (Inches in 24 Hrs.)
10-year	6.0
50-year	7.6
100-year	8.3
500-year	9.8**

* (U. S. Weather Bureau Publication TP-40)
** (Extrapolated from frequency curve)

Drainage areas were delineated and measured from U. S. Geological Survey 7½-minute topographic quadrangle sheets. 1/

The probability and magnitude of flooding are based on an analysis of rainfall and runoff characteristics correlated with regional flood characteristics as reflected by stream gage records.

A flood of 24-hour duration having an average frequency of occurrence in the order of once in 100 years (has a 1 percent chance of being equalled or exceeded in any given year) was selected to best reflect the present flooding problems. However, floods larger than the 100-year, 24-hour flood can, and have occurred

in the study area. Severe as the maximum known flood may have been on any given stream, eventually, a larger flood will likely occur. A 500-year frequency flood was used to show the effects of an extreme flood. The effect of a smaller flood (a flood that occurs more frequently) is shown by analysis of the 10-year flood which has a 10 percent chance of being equalled or exceeded in any given year.

Flow-frequency curves were developed from "Flood Frequency of Small Streams in Alabama", HPR No. 83, U. S. Geological Survey (1977) for drainage areas below 15 square miles and "Floods in Alabama, Magnitude and Frequency", U. S. Geological Survey (1973), for drainage areas above 15 square miles. [3/]

Surveys: Field surveys completed in 1980 included 39 stream channel and valley cross sections, 11 bridges and culvert sections, and 11 road profiles within the study area. All of the surveys were referenced to mean sea level datum. The U. S. Geological Survey 7½-minute topographic quadrangle sheets (20-foot contour) were used for orientation. Aerial photographs, scale 1" = 400', taken in 1979 were used for base maps.

Valley and channel cross sections were surveyed at selected locations to determine valley shape, width and other hydraulic characteristics. Elevations of roads, bridges, culverts, and other control points were established.

Hydraulic Analysis: Using data from field surveys and topographic maps, stage-discharge relationships at each cross section were developed by computing water surface profiles of four flood frequencies (10-, 50-, 100-, and 500-year events).

The modified-step method for open channel flow, as developed for the SCS-WSP-2 computer program, 6/ was used in these calculations. This program solves the head-loss due to roads, bridges, and culverts using the U. S. Bureau of Public Roads method. In making computations, normal bridge flow conditions were assumed. The effects of blockage by trash and debris were not considered.

Valley and channel roughness coefficients were determined from field investigations as outlined in SCS, National Engineering Handbook Section 5, Supplement B. 2/ The roughness values ranged from 0.030 to 0.072 for the channels and from 0.035 to 0.060 for the overbank areas.

The effects of flood-prone area encroachment by the reduction of the floodway width was determined using the FLDWY (12-01-77) computer program developed by SCS. The program determines the floodway depth-width relationship at each valley cross section. The analysis was based on the assumption that the conveyance of the reduced section was equal to the conveyance of the original cross section and that each section was independent of upstream and downstream conditions. Equal conveyance loss on each side of the channel was assumed. The total flood plain flowage area was assumed to be reduced sufficiently to cause a maximum 1.0 foot increase in the 100-year flood elevations (see table 6, appendix C).

Preparation of Map and Profiles: Flood Hazard Area Photomaps, scale 1" = 400', were prepared by drawing the limits of the 100-year and 500-year floods on aerial photos (appendix A, sheets 1 through 13) to indicate the extent of the area subject to inundation. The photomaps are reproductions of ASCS photomaps taken in October 1979. The flood profiles were drawn at a scale of 1" = 500' (appendix B, sheet 01P-14P). The profile stationing is in terms of hundreds of feet and is measured from the aerial photographs.

Natural and cultural values in the flood plain area were evaluated via onsite field reconnaissance conducted by the staff biologist and the local district conservationist. Qualitative observations were made along a line transect in the study area.

ELEVATION REFERENCE MARKS

(See Flood Hazard Areas)

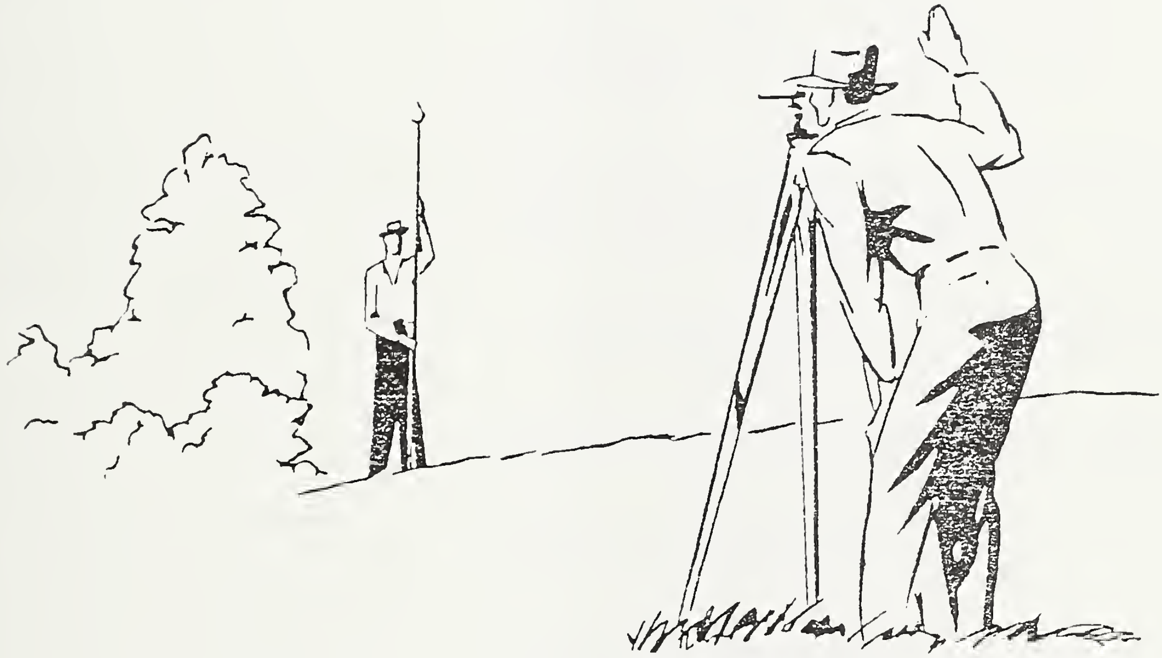


TABLE NO. 4

ELEVATION REFERENCE MARKS 1/

REFERENCE MARK	ELEVATION IN FEET (MSL)*	DESCRIPTION OF LOCATION
USC&GS RR100	294.812	Along Alabama Highway 17, in the southern part of Vernon, Lamar County, on the grounds of Lamar County High School, 88 feet southeast of the southeast corner of the southeast wing of the brick school building, 63 feet west of the west edge of the side walk along the west side of the high school ground. A magnetic station disk stamped "RR100 1935" and set in the top of a concrete post projecting about 10 inches.
USC&GS R-100	303.743	At Vernon, Lamar County, in the west side of the brick County Courthouse, 33 feet south of the main entrance, 1 foot north of the south-west corner of the building, and about 4 feet above ground. A standard disk, stamped "R100 1935" and set vertically.
RMV16	283.78	A chiseled square on the north headwall of bridge over creek on County Road 9, 500 feet west of Marthon Equipment Company.
RMV20	298.64	A chiseled square on top of the south headwall of bridge over Tributary #1 on Alabama Highway 18 west of Vernon.
RMV23	308.03	Nail in the side of a power pole at the corner of SW 3rd Ct. and SW 10th St. in Vernon, Alabama.
RMV24	372.84	Nail in a power pole and on the west side of SW 10th Street at dead end of street.
RM3	318.10	Nail in the side of a power pole 50 feet southwest of Arthur F. Roger's house, 35 feet north of County Road 26, nail in south side of pole 1 foot above ground.
RM5	338.29	Railroad spike in the east side of a power pole, 75 feet northwest of intersection of County Road 26 and a paved road to the southwest in Vernon, Alabama.

TABLE NO. 4 (continued)

ELEVATION REFERENCE MARKS

REFERENCE MARKS	ELEVATION IN FEET (MSL)*	DESCRIPTION OF LOCATION
RM6	332.43	Nail in the side of a power pole on the south side of County Road 26, at the intersection of a paved road. Pole is on the west side of paved road and in front of J. F. Turnam residence.
RM3A	304.04	Railroad spike in the side of a power pole at the intersection of County Road 26 and 1st Street in Vernon, Alabama.
RMV35	294.64	A chiseled square in the northeast corner of the west headwall of a culvert over Town Branch on Alabama Highway 17 north of the Courthouse in Vernon.
RM8	290.68	A chiseled square on the southeast corner of the south headwall on second bridge east of Vernon on Alabama Highway 18.
RM9	290.47	Nail in side of 15 inch sweet gum tree, 20 feet south of Mr. Hankin's driveway, 15 feet east of County Road 9 and 10 feet north of telephone box #233 near east end of cross section 12.
RM13	279.47	A chiseled square on top of the northwest corner of the west abutment on the first bridge south of Vernon on Alabama Highway 17.
USC&GS S-100	279.406	About 1.7 miles south along Alabama Highway 17 from the County Courthouse in Vernon, Lamar County, and set in the top of the southwest end of a long concrete bridge over Yellow Creek. A standard disk, stamped "S 100 1935".
RMV1	406.45	Metal marker in the centerline of Moores Mill Road, 1.4 miles west of Alabama Highway 17 and near east end of Valley Section 1.
RMV31	291.05	A metal disk on the new box culvert on new Alabama Highway 18 east of Vernon where Buck Creek crosses the new road.
RMV30	281.26	Nail in bridge cross member on Hells Creek Road over Hells Creek southeast of Vernon, Alabama.

TABLE NO. 4 (continued)

ELEVATION REFERENCE MARKS

REFERENCE MARKS	ELEVATION IN FEET (MSL)*	DESCRIPTION OF LOCATION
RM15	281.00	Nail in 12 inch poplar tree, 75 feet south of Cross Section 2 and on the north side of Moores Mill Road.
RMV1A	268.47	Nail in side of 18 inch Red Oak tree in pasture, 400 feet north of Cross Section 1 and on ditch at west end of Cross Section 1.
RM16A	277.37	A chiseled square on the east side of Emerson Plant, on curb at end of drive and fence line.
USC&GS X-184	308.244	About 0.86 mile east along Alabama Highway 18 from the Lamar County High School at Vernon, 90 feet south of the centerline of highway at Station 94+97, 80 feet northeast of the northeast corner of a farmhouse, in the northeast corner of farmyard, 34 feet north of pecan tree, 2 feet north of a white metal witness post. A standard disk, stamped X184 reset 1977 and set in the top of a concrete post.
RM-10	329.37	From intersection of State Highway 18 and County Road 9 east of Vernon, follow County Road 9, 1.2 mile, RM is in side of power pole on west side of County Road 9 between Cross Section 13 and 14.

* Mean sea level (MSL).

1/ Locations designated on Flood Hazard Area Photomaps (Appendix A, sheets 1 through 13).

TABLE 5

DISCHARGE-ELEVATION FREQUENCY DATA

Cross Section	Frequency Station	10-Year Elev. (MSL-Ft.)	10-Year Disch. (CFS)	50-Year Elev. (MSL-Ft.)	50-Year Disch. (CFS)	100-Year Elev. (MSL-Ft.)	100-Year Disch. (CFS)	500-Year Elev. (MSL-Ft.)	500-Year Disch. (CFS)
				Yellow Creek					
1	10000	266.9	8300	268.5	16000	268.8	18000	269.6	25000
2	14175	268.8	8300	270.3	15000	270.6	17000	271.3	23000
3	19175	273.9	8200	274.7	14000	274.9	16000	275.3	21000
5	19305	274.5	8200	276.1	14000	277.2	16000	277.9	21000
6	34305	283.8	5950	284.4	9530	284.6	11200	285.2	16000
8	34475	284.4	5950	285.3	9530	285.7	11200	286.6	16000
9	34925	284.9	5900	285.8	9500	286.2	11200	287.0	16000
11	35075	285.4	5900	286.5	9500	287.1	11200	288.4	16000
12	40675	289.1	5700	289.8	9300	290.2	11000	291.1	15700
13	43875	290.0	5600	293.1	9200	293.5	10900	294.4	15500
14	45625	293.6	5600	294.9	9200	295.3	10900	296.3	15500
15	47825	294.7	5300	295.8	8600	296.2	10300	297.2	14700
				Tributary 1					
16	5000	279.5	540	280.2	820	280.5	970	281.0	1300
18	5090	281.1	540	282.5	820	283.0	970	284.0	1300
19	6590	286.6	520	287.0	800	287.3	950	287.6	1200
20	8490	292.9	460	294.1	760	294.2	800	294.6	1100
22	8620	296.2	460	297.7	760	297.9	800	299.1	1100
23	9800	299.3	400	299.9	640	300.1	720	300.6	990
24	10700	303.7	400	304.2	630	304.3	700	304.5	900
25	12230	311.0	300	311.8	500	312.0	580	312.3	720

TABLE 5 (continued)

DISCHARGE-ELEVATION FREQUENCY DATA

Frequency		10-Year		50-Year		100-Year		500-Year	
Cross Section	Station	Elev. (MSL-Ft.)	Disch. (CFS)	Elev. (MSL-Ft.)	Disch. (CFS)	Elev. (MSL-Ft.)	Disch. (CFS)	Elev. (MSL-Ft.)	Disch. (CFS)
				Tributary 1 (Con't)					
26	13120	314.1	280	315.5	480	316.0	560	316.6	700
				Hells Creek					
27	3370	277.7	5500	278.2	9100	278.3	10800	279.0	15300
28	5970	282.4	5500	283.2	9100	283.5	10800	284.1	15300
30	6265	283.0	5400	283.8	9000	284.2	10700	284.8	15100
				Buck Creek					
31	3350	285.7	1300	286.0	1900	286.2	2100	286.6	2900
33	3575	287.6	1300	288.0	1900	288.4	2100	290.3	2900
34	6025	292.1	1200	292.5	1700	292.7	2000	293.4	2700
				Town Branch					
35	2165	291.6	600	293.1	950	293.8	1200	294.4	1600
37	2315	295.4	600	295.5	950	295.7	1200	296.1	1600
38	3115	296.6	600	296.9	950	297.3	1200	297.6	1600
40	3185	296.9	600	298.5	950	299.1	1200	299.8	1600
41	4210	300.4	590	301.2	900	301.6	1100	302.1	1500
42	5370	306.5	580	307.1	850	307.4	1050	307.9	1450
43	7020	313.4	500	314.9	800	315.4	950	316.3	1400
44	8150	320.9	480	321.2	750	321.3	850	321.8	1300
45	9990	330.0	420	330.5	650	330.6	710	331.0	1000
46	11340	336.2	250	336.5	380	336.6	440	336.9	600
48	11430	337.5	250	337.8	380	337.9	440	338.2	600

TABLE 6
FLOODWAY WIDTHS AND
PEAK DISCHARGE AND AVERAGE VELOCITIES, 100-YEAR FLOOD 1/

Cross Section	Station	Left (feet)	Right (feet)	Average Floodway Velocity (ft./sec.)	Discharge (CFS)
			Yellow Creek		
1	10000	90	2051	1.80	18000
2	14175	27	2630	1.45	17000
6	34305	424	898	2.25	11200
12	40675	130	1148	1.97	11000
13	43875	220	331	3.59	10900
14	45625	177	323	3.67	10900
15	47825	852	442	1.69	10300
			Tributary 1		
19	6590	46	56	3.47	950
23	9800	41	79	2.18	720
24	10700	8	69	3.66	700
			Hells Creek		
27	3370	17	342	7.47	10800
			Buck Creek		
34	6025	160	32	3.22	2000
			Town Branch		
38	3115	95	9	2.93	1200
41	4210	22	27	4.68	1100
42	5370	17	13	5.59	1050
44	8150	43	19	4.75	850

NOTE: 1/ This table shows the maximum allowable encroachment that will produce a 1.0 foot increase in the 100-year water surface elevation at the cross section. Any further reduction of floodway widths will increase the elevation of the water surface more than 1.0 foot. The reduction in floodway width is based on equal reduction in flood conveyance factors on both sides of the channel, where possible. Distances to the left and right are measured from the center of the main channel looking downstream.

GLOSSARY OF TERMS

Bridge Area--The effective hydraulic flow area of a bridge opening accounting for the presence of piers, attached conduits, and skew (alignment), if applicable.

Channel--A natural or artificial water course of perceptible extent with definite bed and banks to confine and conduct continuously or periodically flowing water.

Flood--"Flood" or "flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas from:

(1) The overflow of inland or tidal waters and/or

(2) The unusual and rapid accumulation of runoff of surface waters from any source.

Flood Frequency--A means of expressing the probability of flood occurrences as determined from a statistical analysis of representative streamflow or rainfall and runoff records. It is customary to estimate the frequency with which specific flood stages or discharges may be equalled or exceeded, rather than the frequency of an exact stage or discharge. Such estimates by strict definition are designated "exceedence frequence", but in practice the term "frequency" is used. The frequency of a particular stage or discharge is usually expressed as occurring once in a specified number of years. Also see definition of "recurrence interval." For example -

A 100-year flood is one having an average frequency of occurence in the order of once in 100 years. It has a 1 percent chance of being equalled or exceeded in any given year. It is based on statistical analyses of streamflow records available for the watershed and analyses of rainfall and runoff characteristics in the general region of the watershed.

Flood Hazard Area--Synonymous with Flood Plain (general). Used in FEMA National Flood Insurance Program. Commonly used in reference to flood map.

Flood Peak--The highest stage or discharge attained during a flood event; also referred to as peak stage or peak discharge.

Flood Plain (general)--The relatively flat area or low lands adjoining the channel of a river, stream, or watercourse; ocean, lake, or other body of standing water which has been or may be covered by floodwater.

Floodway Fringe--The portion of the flood plain beyond the limits of the floodway. Flood waters in this area are usually shallow and slow moving. (See Figure 2, page 15)

Flood Plain (specific)--A definitive area within a flood plain (general) or flood-prone area known to have been inundated by a historical flood, or determined to be inundated by floodwater from a potential flood of a specified frequency.

Flood Prone Area--Synonymous with Flood Plain (general). Used in Alabama land management and use law.

Flood Profile--A graph showing the relationship of water surface elevation to stream channel location. It is generally drawn to show the water surface to elevation for the peak of a specific flood, but may be prepared for conditions at a given time or stage.

Flood Stage--The elevation of the overflow above the natural banks of a stream or body of water. Sometimes referred to as the elevation and the flood peak elevation measures for a specific storage area.

Floodway--The channel of the stream and adjacent portions of the flood plain designated to carry the flow of the design flood. In Alabama this is the 100-year frequency flood.

High Water Mark (HWM)--The maximum observed and recorded height or elevation that floodwater reaches during a storm, usually associated with the flood peak. The high water mark may be referenced to a particular building, bridge, or other landmark, or based on debris deposits on bridges, fences, or other evidence of the flood.

Low Bank--The highest elevation at a specific stream channel cross section at which the flow in the stream can be contained in the channel without overflowing into adjacent overbank areas.

Low Point on Roadway--The lowest elevation on a road profile usually in the vicinity of where the road crosses the stream. It is the first point on the roadway to be flooded.

Potential Flood--A spontaneous event (natural phenomenon) capable of occurring from a combination of meterological, hydrological, and physical conditions; the magnitude of which is dependent upon specific combinations. See Flood and Flood Frequency.

Recurrence Interval--The average interval of time expected to elapse between floods of a particular severity based on stage or discharge. Recurrence interval is generally expressed in years and is determined statistically from actual or representative streamflows. Also see definition of Flood Frequency.

Roadway at Crossing (Top)--The elevation of the roadway immediately above the stream channel. It may be higher than the low point of the roadway.

Runoff--That part of precipitation which flows across the land and enters a perennial or intermittent stream.

Stream Channel--A natural or artificial watercourse of perceptible extent, with definite bed and banks to confine and conduct continuously or periodically flowing water.

Stream Channel Bottom--The lowest part of the stream channel (either in a constructed cross section or a natural channel). Bottom may be plotted and connected to provide a stream bottom profile.

Stream Channel Flow--That water which is flowing within the limits of a defined watercourse.

Stream Terrace--A flat or undulating plain bordering a floodplain. Terraces normally occur at higher elevations than floodplains and usually are either free from flooding or flooded less often than once every two years.

Structural Bottom of Opening--The lowest point of a culvert or bridge opening with a constructed bottom through which a stream flows that could tend to limit the stream channel bottom to that specific elevation. This structural bottom may be covered with sediment or debris which further restricts the size of the opening.

Theoretical Floodway--The adjusted portion of the 100-year flood plain allowing for an acceptable increase in the 100-year flood depth, no building or fill permitted.

Top of Opening--The lowest point of a bridge, culvert or other structure over a river, stream or watercourse that limits the height of the opening through which water flows. This is referred to as "low steel" or "low chord" in some regions.

Watershed--A drainage basin or area which collects and transmits runoff usually by means of streams and tributaries to the outlet of the basin.

Watershed Boundary--The divide separating one drainage basin from another.

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